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# CZIC COLLECTION

UNITED STATES  
DEPARTMENT OF COMMERCE

DRAFT ENVIRONMENTAL IMPACT STATEMENT  
PREPARED ON AMENDMENTS TO THE  
NORTH CAROLINA COASTAL MANAGEMENT PROGRAM

## COASTAL ZONE INFORMATION CENTER

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and

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Office of Coastal Zone Management

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## SUMMARY

(X) Draft Environmental Impact Statement

( ) Final Environmental Impact Statement

This document was prepared by the Department of Commerce, National Oceanic and Atmospheric Administration, Office of coastal Zone Management. For additional information about the proposed action or this document, contact:

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Washington, D.C. 20235  
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### 1. TYPE OF ACTION

(X) Administrative

( ) Legislative

### 2. BRIEF DESCRIPTION OF THE ACTION

It is proposed that the Assistant Administrator for Coastal Zone Management approve the amendment of three elements into the North Carolina Coastal Zone Management Program. The three elements are: 1) Shorefront Access and Protection Planning Process, 2) Energy Facility Siting Planning Process, 3) Shoreline Erosion Mitigation Planning Process (CZMA, Section 305(b)(7), (8), (9)).

### 3. SUMMARY OF ENVIRONMENTAL IMPACTS

Approval and implementation of these amendments will allow the State to more effectively implement its policies on shorefront access and protection planning, energy facility siting, and shoreline erosion. The environmental impacts of the approval of each of these planning elements is discussed in Part III of this document.

### 4. ALTERNATIVES CONSIDERED

I. The Assistant Administrator could delay or deny approval of these amendments if the policies are not comprehensive enough to meet the requirements of the CZMA as amended (Section 305(b)(7), (8), (9)).

II. The Assistant Administrator could delay or deny approval of all separate planning elements in the amendment if deficiencies are identified.

5. DISTRIBUTION Comments have been requested from the following Federal, State and local agencies and other parties:

Federal Agencies

Advisory Council on Historic Preservation  
Department of Agriculture  
Department of Commerce  
Department of Defense  
Department of Energy  
Department of Health, Education & Welfare  
Department of Housing & Urban Development  
Department of the Interior  
Department of Justice  
Department of Labor  
Department of Transportation  
U.S. Coast Guard  
Environmental Protection Agency  
Federal Energy Regulatory Commission  
General Services Administration  
Marine Mammal Commission  
Nuclear Regulatory Commission

National Interest Groups

A.M.E.R.I.C.A.N.  
AFL-CIO  
American Association of Port Authorities  
American Bar Association  
American Bureau of Shipping  
American Farm Bureau Federation  
American Fisheries Society  
American Forest Institute  
American Gas Association  
American Hotel and Motel Association  
American Industrial Development Council  
American Institute of Architects  
American Institute of Merchant Shipping  
American Institute of Planners  
American Littoral Society  
American Mining Congress  
American Oceanic Organization  
American Petroleum Institute  
American Shore and Beach Preservation Association  
American Society of Civil Engineers  
American Society of Landscape Architects, Inc.  
American Society of Planning Officials  
American Water Resources Association  
American Waterways Operators  
Amoco Production Company

Ashland Oil, Inc.  
Associated General Contractors of America  
Association of Oil Pipe Lines  
Atlantic Richfield Company  
Atlantic States Marine Fisheries Commission  
Atomic Industrial Forum  
Barrier Islands Coalition  
Boating Industry Association  
Center for Law and Social Policy  
Center for Natural Areas  
Center for Urban Affairs  
Center for Urban & Regional Resources  
Chamber of Commerce of the United States  
Chevron U.S.A., Inc.  
Cities Service Company  
City Service Oil Company  
Coastal States Organization  
Conservation Foundation  
Continental Oil Company  
Council of State Governments  
Council of State Planning Agencies  
The Cousteau Society  
Earth Metabolic Design Laboratories, Inc.  
Edison Electric Institute  
El Paso Natural Gas Co.  
Environmental Policy Center  
Environmental Defense Fund, Inc.  
Environmental Law Institute  
EXXON Company, U.S.A.  
Friends of the Earth  
Getty Oil Company  
Great Lakes Basin Commission  
Gulf Energy and Minerals, U.S.  
Gulf Oil Company  
Gulf Refining Company  
Gulf South Atlantic Fisheries Development  
Foundation  
Independent Petroleum Association of America  
Industrial Union of Marine & Shipbuilding  
Workers of America  
Institute for the Human Environment  
Institute for Marine Studies  
Interstate Natural Gas Association of America  
Izaak Walton League  
Lake Michigan Federation  
League of Conservation Voters  
League of Women Voters Education Fund  
Marathon Oil Company  
Marine Technology Society  
Mobil Oil Corporation  
Mobil Exploration & Producing, Inc.

Murphy Oil Company  
National Academy of Engineering  
National Association of Conservation Districts  
National Association of Counties  
National Association of Dredging Contractors  
National Association of Electric Companies  
National Association of Engine & Boat Manufacturers  
National Association of Home Builders  
National Association of Realtors  
National Association of Regional Councils  
National Association of State Boating Law  
Administrators  
National Association of State Park Directors  
National Audubon Society  
National Boating Federation  
National Canners Association  
National Coalition for Marine Conservation, Inc.  
National Commission on Marine Policy  
National Conference of State Legislatures  
National Environmental Development Association  
National Farmers Union  
National Federation of Fisherman  
National Fisheries Institute  
National Forest Products Association  
National Governors Association  
National League of Cities  
National Ocean Industries Association  
National Parks and Conservation Association  
National Petroleum Council  
National Petroleum Refiners Association  
National Realty Committee  
National Recreation and Park Association  
National Research Council  
National Science Foundation  
National Science Teachers Association  
National Shrimp Congress  
National Society of Professional Engineers  
National Wildlife Federation  
National Waterways Conference  
Natural Gas Pipeline Company of America  
Natural Resources Defense Council  
The Nature Conservancy  
Nautilus Press  
New England River Basin Commission  
North Atlantic Ports Association  
Outboard Marine Corporation  
Resources for the Future  
Rice University Center for Community Design  
and Development

Shell Oil Company  
 Shellfish Institute of North America  
 Shipbuilders Council of America  
 Sierra Club  
 Skelly Oil Company  
 Society of Industrial Realtors  
 Society of Real Estate Appraisers  
 Soil Conservation Society of America  
 Southern California Gas Company  
 Sport Fishing Institute  
 Standard Oil Company of Ohio  
 Sun Company, Inc.  
 Tenneco Oil Company  
 Texaco, Inc.  
 Texas A & M University  
 United Brotherhood of Carpenters & Joiners  
     of America  
 Union Oil Company of California  
 Urban Research and Development Association, Inc.  
 U.S. Conference of Mayors  
 U.S. Power Squadrons  
 Virginia Marine Resources Commission  
 Water Pollution Control Federation  
 Water Transport Association  
 Western Oil and Gas Association  
 Wildlife Management Institute  
 The Wildlife Society  
 World Dredging Association

State and Regional Agencies and Local Governments in North Carolina

Chairmen of the 20 Coastal County Commissions  
 Coastal Area Mayors of Cities and Towns involved in planning and  
     implementation under the N.C. Coastal Management Program  
 Coastal City Managers  
 Coastal County Managers  
 Coastal County Economic Development Commissions  
 Coastal Councils of Government  
 Coastal Plains Regional Commission  
 Coastal Representatives to the State Legislature  
 Coastal Resources Advisory Council Members  
 Coastal Resources Commission Members  
 Coastal Soil and Water Conservation Commissions  
 Department of Administration  
     Chairman of Marine Science Council  
     Office of Intergovernmental Relations  
     Office of Marine Affairs  
     Office of Policy Development

Department of Agriculture  
 Department of Commerce  
     Chairman of Economic Development Commission  
     North Carolina State Ports Authority  
     North Carolina Utilities Commission  
 Department of Cultural Resources  
 Department of Human Resources  
 Department of Labor  
 Department of Natural Resources and Community Development  
     Assistant Secretary for Community Development  
     Assistant Secretary for Natural Resources  
     Division of Community Assistance  
     Division of Earth Resources  
     Division of Environmental Management  
     Division of Forest Resources  
     Division of Marine Fisheries  
     Land Policy Council  
     Office of Plans and Programs  
     Wildlife Resources Commission  
 Department of Transportation  
 North Carolina Secretary of State  
 North Carolina State University  
     Agricultural Extension Service  
     Sea Grant Program

#### State and Local Interest Groups

Association of County Commissioners  
 Audubon Society  
 Bath Historical Society  
 Cape Fear Technical Institute  
 Carolina Coastal Club  
 Carolina Power and Light Company  
 Carteret County Environmental Resources Commission  
 Carteret County Wildlife Club  
 Carteret Technical Institute  
 Coastal Carolina Community College  
 Coastal Chambers of Commerce  
 Coastal Plains Center for Marine Resources  
 College of the Albemarle  
 Conservation Council of North Carolina  
 Craven Community College  
 Duke University School of Environmental Management  
 Dunes of Dare Garden Club  
 East Carolina University School of Geology  
 Holden Beach Homeowners Association  
 Institute of Marine Sciences  
 League of Women Voters of North Carolina  
 Lower Cape Fear Historical Society

Marine Resources Center

Bogue Banks

Fort Fisher

Manteo

New Hanover Clear Water Association

North Carolina Farm Bureau

North Carolina Home Builders Association

North Carolina Institute of Government

North Carolina League of Municipalities

North Carolina Petroleum Council

North Carolina Realtors Association

North Carolina State Grange

North Carolina Wildlife Federation

Pamlico - Beach Preservation Foundation

Pamlico Technical Institute

People to Preserve Jockey's Ridge, Inc.

Research Triangle Institute

Sierra Club: Cypress Group, Cape Fear Group, Research Triangle Group

Southern Shores Civic Association

Texas Gulf, Inc.

University of North Carolina - Chapel Hill Planning School

University of North Carolina - Wilmington School of Marine Sciences

Water Resources Research Institute

Weyerhaeuser Company

6. COMMENT PERIOD

This DEIS was transmitted to the Environmental Protection Agency on \_\_\_\_\_ . Comments should be submitted to the Office of Coastal Zone Management by \_\_\_\_\_ .

PART I

## INTRODUCTION

## A. The Federal Coastal Zone Management Act

In response to intense pressures, and because of the importance of the coastal areas of the United States, Congress passed the Coastal Zone Management Act (P.L. 92-583)(hereinafter referred to as the CZMA or the Act) which was signed into law on October 27, 1972. The Act authorized a Federal grant-in-aid program to be administered by the Secretary of Commerce, who in turn delegated this responsibility to the National Oceanic and Atmospheric Administration's (NOAA) Office of Coastal Zone Management (OCZM). The Coastal Zone Management Act of 1972 was substantially amended on July 26, 1976, (P.L. 94-370). The Act and the 1976 amendments affirm a national interest in the effective protection and development of the coastal zone, by providing assistance and encouragement to coastal States to develop and implement rational programs for managing their coastal zones.

Broad guidelines and the basic requirements of the CZMA provide the necessary direction for developing these State programs. These guidelines and requirements for program development and approval are contained in 15 CFR Part 923, as revised and published March 1, 1978, in the Federal Register. In summary, the requirements for program approval are that a State develop a management program that:

- (1) Identifies and evaluates those coastal resources recognized in the Act that require management or protection by the State;
- (2) Reexamines existing policies or develops new policies to manage these resources. These policies must be specific, comprehensive and enforceable, and must provide an adequate degree of predictability as to how coastal resources will be managed;
- (3) Determines specific uses and special geographic areas that are to be subject to the management program, based on the nature of identified coastal concerns. The basis for management use (or their impacts) and areas should be based on resource capability and suitability analyses, socioeconomic considerations and public preferences;
- (4) Identifies the inland and seaward areas subject to the management program;
- (5) Provides for the consideration of the national interest in the planning for and siting of facilities that meet more than local requirements; and

- (6) Includes sufficient legal authorities and organizational arrangements to implement the program and to insure conformance to it.

In arriving at these substantive aspects of the management program, States are obliged to follow an open process which involves providing information to and considering the interests of the general public, special interest groups, local governments, and regional, State, interstate and Federal agencies.

Section 305 of the CZMA authorized a maximum of four annual grants to States to assist them in development of a coastal management program. After developing a management program, the State may submit it to the Secretary of Commerce for approval pursuant to Section 306 of the CZMA. If approved, the State is then eligible for annual grants under Section 306 to implement its management program. If a program has deficiencies which need to be remedied or has not received Secretarial approval by the time Section 305 program development grants have expired, a State may be eligible for preliminary approval and additional funding under Section 305(d).

Section 307 of the Act stipulates that Federal agency actions shall be consistent, to the maximum extent practicable with approved State management programs. Section 307 further provides for mediation by the Secretary of Commerce when a serious disagreement arises between a Federal agency and a coastal State with respect to a Federal consistency issue.

Section 308 of the CZMA contains several provisions for grants and loans to coastal States to enable them to plan for and respond to onshore impacts resulting from coastal energy activities. To be eligible for assistance under Section 308, coastal States must be receiving Section 305 or 306 grants, or, in the Secretary's view, be developing a management program consistent with the policies and objectives contained in Section 303 of the CZMA.

Section 309 allows the Secretary to make grants (90 percent Federal share) to States to coordinate, study, plan, and implement interstate coastal management programs.

Section 310 allows the Secretary to conduct a program of research, study, and training to support State management programs. The Secretary may also make grants (80 percent Federal share) to States to carry out research studies and training required to support their programs.

Section 315 authorized grants (50 percent Federal share) to States to acquire lands for access to beaches and other public coastal areas of environmental, recreational, historical, aesthetic, ecological, or cultural value, and for the preservation of islands, in addition to the estuarine sanctuary program to preserve a representative series of undisturbed estuarine areas for long-term scientific and educational purposes.

## PART II

### Description of the Proposed Action:

The proposed action is to approve amendments to the North Carolina Coastal Zone Management Program to meet the requirements of Section 305(b)(7), (8), and (9) of the Coastal Zone Management Act of 1972, as amended. The regulations cover three areas:

- A. Shorefront Access and Protection Planning Process (§305(b)(7))
- B. Energy Facility Siting Planning Process (§305(b)(8))
- C. Shoreline Erosion Mitigation Planning Process (§305(b)(9))

## A. SHOREFRONT ACCESS AND PROTECTION PLANNING

### Introduction

North Carolina has developed the following planning process which identifies public shorefront areas appropriate for access or protection to fulfill the requirements of Section 305(b)(7) of the Coastal Zone Management Act of 1972, as amended.

#### "(a) 923.25 Shorefront access and protection planning

- "(1) A procedure for assessing public areas requiring access or protection;
- "(2) A definition of the term 'beach' and an identification of public areas meeting that definition;
- "(3) Articulation of enforceable State policies pertaining to shorefront access and protection;
- "(4) A method for designating shorefront areas (either as a class or site specifically) as areas of particular concern or areas for preservation or restoration, if appropriate; and
- "(5) An identification of legal authorities, funding programs and other techniques that can be used to meet management needs.

#### "(b) Comment. Statutory Citation, Subsection 305(b)(7):

The management program for each coastal State shall include  
 (7) A definition of the term 'beach' and a planning process for the protection of, and access to, public beaches and other public coastal areas of environmental, recreational, historical, esthetic, ecological or cultural value.

- "(1) The basic purpose in focusing special planning attention on shorefront access and protection is to express more than local concern with respect to additional access or protection needs for public beaches and other public coastal areas of environmental, recreational, historic, esthetic, ecological or cultural value and to include these areas for special management attention within the purview of the State's management program. If appropriate, this special management attention may be achieved by designation of public shorefront areas requiring additional access or protection as

areas of particular concern or areas for preservation or restoration. Since the specific planning requirements called for in this section are closely related to the broader requirements for areas of particular concern and areas for preservation and restoration, many of the requirements called for in paragraph (a) above can be met by completing the work called for in 923.21 (Areas of Particular Concern) and 923.24 (Areas for Preservation or Restoration)."

North Carolina fulfilled the requirement of 923.21 and 923.24 in obtaining program approval (see the North Carolina Coastal Management Environmental Impact Statement under Areas of Environmental Concern Chapters 1 and 5). The State's authority to designate beach areas as AEC's and to regulate development within them was given to the Coastal Resources Commission (CRC) through the Coastal Area Management Act (CAMA). The legislature's action of passing the CAMA, the CRC's action of designating beach areas as Areas of Environmental Concern and the action of the Department of Natural Resources and Community Development in implementing the regulatory program, established that beach areas are of statewide significance.

923.25(a)(2) A definition of the term "beach" and an identification of public areas meeting that definition has been partially satisfied through the AEC designation. The AEC guidelines describe beaches as, "lands consisting of unconsolidated soil materials that extend from the mean low water line landward to a point where either (a) the growth of vegetation occurs, or (b) a distinct change in the slope or elevation of the unconsolidated sands alters the configuration of the land form." While this definition has significance for regulatory purposes by providing a physical description of beaches it lacks a clear statement of public rights in beach areas and it does not apply to estuarine beaches. To fully comply with the requirements of Section 923.25(a)(2) the following definition has been adopted by the Coastal Resources Commission (pending public hearing) as that which shall be used in all policy decisions pertaining to public rights in beach areas. This definition also applies to both ocean and estuarine shorelines.

Beach - land areas extending from the mean low to the mean high water line and beyond this line to where either (a) the growth of vegetation occurs, or (b) a distinct change in slope or elevation occurs, or (c) riparian owners have specifically restricted access above the mean high water line.

In all cases, the beach extends at least to the mean high water line. A legal analysis of the public's rights in beach areas is contained in Appendix 1 of this document and is taken from a Sea Grant publication written by David Brower entitled, "Access to the Nation's Beaches: Legal and Planning Perspectives."

In summary, the definition of the term "beach" used in the Guidelines for Areas of Environmental Concern and contained in the Appendix of the North Carolina Coastal Management Plan represents a component of the Ocean Hazard Area that is identified in order to give special regulatory protection to ocean beaches. This protection is given by precluding all development in beach areas and by stating that the land use priority in ocean hazard areas is recreation oriented development, i.e., providing beach access. The second definition of the term "beach" applies to both developed and undeveloped areas and states that the beach areas are not exclusive and the public does have rights in the areas described. However, this does not in any way require private property owners to provide public access. This responsibility is clearly stated in the policy section of this document as that of government and commercial interests.

923.25(a)91) A procedure for assessing public areas requiring access or protection.

923.25(c) Comment. In meeting the requirements of 923.25(a)(1) states should take the following into account:

(1) States should make use of the analyses and considerations of statewide concern developed to meet the requirements of 923.21 dealing with areas of particular concern. It also is recommended that information contained in State Outdoor Comprehensive Recreation Plans be considered.

The analyses and consideration of statewide concern for beach areas is addressed in the approved North Carolina Coastal Program. In addition, two current State documents, the N. C. State Comprehensive Outdoor Recreation Plan and the N. C. Water Resources Framework Study, also speak to the protection and public access needs to beach areas (Appendix 2).

The SCORP identifies beach access as a major recreation issue, stating the immediacy of the problem and outlining a course of action to address these needs. This approach describes the process through which North Carolina will provide adequate public beach access and represents a joint effort between the Division of Parks and Recreation and the Office of Coastal Management. This process will be more fully discussed in Part 3 of this section.

The Water Resources Framework Study was initially developed independently of the coastal program because the coastal program was in the early stages of development. Currently, the two offices are working closely to refine State policies.

(2) If islands are not considered areas of particular concern, in the context provided by 923.21, then the protection needs should be addressed through this planning process. Analysis of the need and priority for protection will be useful in establishing eligibility for such funds as may be available for islands acquisition pursuant to subsection 315(2) of the Act.

Islands were not designated as Areas of Environmental Concern by the Coastal Resources Commission. However, consideration was given to the idea of designating the Barrier Islands. This action was not taken because it was felt by the CRC that the intent of legislature was to make designations by component parts of the coastal area rather than by broad categories such as islands. Under the current set of regulations, islands do receive protection through the systems concept used in designating the AEC's. For example, the ocean hazard areas are described and the regulations (Appendix B of the Coastal Management Plan) are based on the precepts of island migration and overwash and beach dynamics. Also, the estuarine categories are described as a unit, i.e., the Estuarine System and the regulations acknowledge the interdependences of these parts by allowing consideration of secondary impacts in regulatory decisions. In most cases, the regulations would not prohibit development but would clearly insure that it would proceed with regard for the affected biological and physical systems.

The Fragile Coastal Natural Resources Areas, another group of AEC categories, is an additional means by which protection can be given to islands. Under this procedure, a particular island or group of islands could be nominated to the Commission for designation as AEC's and a set of regulatory standards tailored to the specific protection needs of the island would be developed and enforced.

Establishing priorities for the protection of islands through acquisition is a consideration of the North Carolina Natural Heritage Program. The Heritage Program is charged with inventorying the unique and rare natural resources of the state and assessing the priorities for their protection. In order to keep the objectives of the coastal program in perspective with those of the State, the protection of natural areas, including islands, must reflect State priorities as set by the Heritage Program.

(3) In developing a procedure for identifying access and protection needs, States should analyze (a) the supply of existing public facilities and areas, (b) the anticipated demand for future use of these facilities, and (c) the capability and suitability of existing areas to support increased access. Based on these and other considerations, as appropriate, the State planning process shall include a description of appropriate types of access and protection, taking into account governmental and public preferences, resource capabilities and priorities.

The procedure for identifying access and protection needs closely follows the suggested format contained in 923.25(c)(3) above. The identification of access needs was accomplished through an extensive inventory process that is included along with an introduction and analysis of data in Appendix 3 of this document. The only information that was not fully incorporated in this study was that for private estuarine beaches and public boat ramps which is currently being gathered. However, two statements can safely be made at this point: that private beaches in estuarine areas are increasing in number and popularity; and that additional public boat ramps are needed particularly in the central coastal area including Carteret, Craven, and Pamlico and Beaufort counties.

The protection needs are fully met through the regulatory program and all of the considerations suggested in 923.25(c)(5) were incorporated in the Commission's designation process. (See the N.C. Coastal Management Plan under Designation of Areas of Environmental Concern).

(4) In determining access requirements, States should consider both physical and visual access. The emphasis, however, should be on the provision of increased physical access. Special attention should be given to recreational needs of urban residents for increased shorefront access. Physical access may include, but need not be limited to, footpaths, bikepath boardwalks, jitneys, rickshaws, parking facilities, ferry services and other public transport. Visual access may involve, but need not be limited to, viewpoints, setback lines, building height restrictions, and light requirements.

Visual access needs have been left to the discretion of local governments to be expressed through policy statements contained in the local land use plans. While the Coastal Area Management Act clearly addresses esthetics in the purposes section 113A-102, it is the decision of the CRC that this is a local concern to be expressed through the land use plans and not be a consideration of the regulatory process, except in those cases where local governments have adopted clear policies that render a project inconsistent with the local plans.

Physical access requirements will be determined by local governments through the land use planning process, by the CRC through the development of the planning guidelines, and local plans approval and by the Division of Parks and Recreation through grants for acquiring public access rights and site facilities. Local governments will determine their public access needs in the context of the land use plan based on the guidelines developed by the CRC. The CRC will, in turn, review the plans individually and as a region to insure that the public demand for access is met. This review

will focus particularly on the needs of seasonal/day visitors from nearby urban areas and balance these needs with the availability of local resources. Finally, the Division of Parks and Recreation in cooperation with CRC efforts will award access funds.

923.25(c)(3) Articulation of enforceable State policies pertaining to shorefront access and protection.

At the present time, there are three sets of enforceable State policies including the protection policies as expressed through the AEC regulatory guidelines and the access policies expressed in the N.C. SCORP and in the N.C. Water Resources Framework Study. Each of these policy sets have clear lines of enforceability.\*

An additional set of State policies developed by a subcommittee of the Coastal Resources Commission, is currently being considered by the Commission for adoption and will be enforced through the Governor's Executive Order as part of the (to be) approved State Coastal Management Program. This statement of policy reads as follows:

#### SHOREFRONT ACCESS POLICIES

##### Declaration:

It is hereby declared to be the policy of the State of North Carolina to foster, protect, improve and ensure optimum access to recreational opportunities at beach areas consistent with public rights, rights of private property owners and the need to protect natural resources from overuse. These policies reflect the position that in areas other than State parks, the responsibility of providing adequate beach access rests primarily with local units of government. Thus, the following policies are intended to supplement and strengthen any local efforts.

##### Definition:

The term "beach" as used in these policies is defined as areas extending from the mean low to the mean high water line and beyond this line to where either (a) the growth of vegetation occurs, or (b) a distinct change in slope or elevation occurs, or (c) riparian owners have specifically and legally restricted access above the mean high water line.

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\* The N.C. Water Resources Framework Study references the authorities contained in the SCORP and the State's authority of eminent domain in establishing its enforceability.

This definition is intended to describe those shorefront areas historically used by the public. Whether or not the public has rights in the defined areas above the MHW mark can only be answered by the courts. The public does have clear rights below the MHW mark. The following policies recognize public use rights in the beach areas as defined but do not in any way require private property owners to provide public access to the beach.

IT IS STATE POLICY THAT:

1. Development shall not interfere with the public's right of access to the shorefront where acquired through public acquisition, dedication, or customary use as established by the courts.
2. The responsibility of insuring that the public can obtain adequate access to public trust resources or the ocean, sounds, rivers and tributaries is primarily that of local governments to be shared and assisted by State and Federal Government.
3. Public beach area projects funded by the State and Federal Government will not receive initial or additional funds unless provisions are made for adequate public access. This must include access rights, adequate identification and adequate parking.
4. Policies regarding State and Federal properties with shorefront areas intended to be used by the public must encourage, permit and provide public access and adequate parking so as to achieve maximum public use and benefit of these areas consistent with establishing legislation.
5. State and Federal funds for beach access will be provided only to localities that also provide protection of the frontal dunes.
6. The State should continue in its efforts to supplement and improve highway, bridge and ferry access to and within the twenty county coastal area consistent with the approved local land use plans. Further, the State should, wherever practical, work to add public fishing catwalks to appropriate highway bridges and should incorporate catwalks in all plans for new construction and for remodeling of bridges. It is the policy of the State to seek repeal ordinances preventing fishing from bridges except where public safety would be compromised.
7. In order to avoid weakening the protective nature of frontal dunes, no development will be permitted which would involve the removal or relocation of frontal dune sand or frontal dune vegetation. 7 NCAC .0306 (c). The sands held in the frontal dune are recognized as vital for the nourishment and protection of ocean beaches.
8. All land use plans and State actions to provide additional shorefront access must recognize the need of providing access to all socioeconomic groups.

APPENDIX A: ACCESS TO THE NATION'S BEACHES: LEGAL AND PLANNING PERSPECTIVES

By David Brower (pages 31-33)

## III. North Carolina

Broadly speaking, the State owns the beach seaward of the mean high tide line (wet-sand), but the beach above the mean high tide line (dry-sand and upland) is in private ownership. The North Carolina Supreme Court has specifically held that the State owns the wet-sand, defined as "the strip of land that lies between the high and low water marks and this alternately wet and dry according to the flow of the tide." (Capune v. Robbins, 273 N. C. 581 (1968)). This definition was borrowed from the New York courts. The "high water mark" used in the definition is construed to be the mean high tide line. This was made clear in Carolina Fishing Pier, Inc. v. Town of Carolina Beach, 277 N.C. 297 (1970), where the court, relying on California cases, stated that "The high-water mark is generally computed as a mean or average high-tide, and not as the extreme height of the water." Land ownership can thus be depicted as follows:

State owned (foreshore)		Privately owned	
water	mean high tide line		dunes

No North Carolina case has dealt specifically with access by the public over unencumbered privately owned land to get to the wet-sand; existing case law has involved only the rights of littoral owners to use it. The clearest example is the Capune case, in which the court recognized the littoral owner's right of access to the water, and established standards for the height of a pier that crossed the foreshore between the littoral owner's property and the water. However, in Capune, the court at 590 did concede (indicta) that the littoral owner has the right to prohibit use of the dry-sand and upland by other people, indicating that the court may hold that private owners have the right to prevent public access across their property should this issue be litigated.

It would thus seem that while the use of the dry-sand question has never been decided in a North Carolina court, there is some existing precedent indicating that a littoral landowner has the right to prevent use of the dry-sand by the public as well as access across his property to the foreshore. However, this conclusion should apply only to unencumbered land, meaning that in many areas there may be a public right of access or use via prescriptive easement, implied dedication, or similar encumbrance on fee simple ownership. These mechanisms for achieving access are mentioned to

make the point that the public may already have a right of access across and/or the right to use what is generally considered privately owned land, meaning that private ownership may already be limited by existing public rights.

Specifically, under a long line of recent cases, including Janicki v. Lorek, 255 N.C. 53 (1961), and Andrews v. Country Club Hills, Inc., 18 N.C. App. 6 (1973), the public has a right to use access routes recorded on subdivision plats, within the meaning of N.C.G.S. 136-96, so long as these have not been withdrawn. Accordingly, in many beachfront subdivisions, there currently exists a right of access across what may appear to be privately owned land.

Land which has traditionally been used by the public may be subject to a prescriptive easement running with the land, under the criteria set forth in Dickinson v. Pake, 284 N.C. 276 (1973).

### Conclusion

It seems clear that in North Carolina, the State owns the wet-sand, subject to a public trust, but that everything above it is privately owned. However, there are a number of mechanisms under traditional property law in North Carolina by which the public can acquire, and may have already acquired, rights of access across the upland and use of the dry-sand. Accordingly, in some areas, private ownership of upland and dry-sand areas is, or may be held to be, limited by public rights of access and use.

## APPENDIX B

- (1) N.C. State Comprehensive Outdoor Recreation Plan, excerpt Objective B. 8. Beach Access
- (2) N.C. Water Resources Framework Study, excerpt, State Administrative Policy on Water Resources Planning, pages 2-6 and 2-7.

N. C. STATE COMPREHENSIVE OUTDOOR RECREATION PLANOBJECTIVE B.8. Beach access

Access to our public water resources is becoming increasingly restricted as property is subdivided for private home and commercial use. This problem is particularly acute in sections of the coastal area where legal public access to the ocean beach is not available. The Coastal Resources Commission, in cooperation with many local governments, have documented this need of additional access areas as well as the need to provide adequate parking, proper identification, and protection of the primary sand dune at access areas.

Task B.8.a. Determine the long-term beach access needs based on the current supply of access areas and the projected demands of access based on population projections.

There must be a careful determination of access needs so that any expenditure of public funds can be effectively applied to those areas in greater need of additional access. Currently, the Office of Coastal Management is concluding an inventory of existing public access areas and the facilities provided at each. This information, then, will be correlated with the population projection developed through the land use planning element of the Coastal Area management Program and in those areas facing growth an estimation can be made to identify the number of additional access areas needed.

Task B.8.b. Develop State position on beach access through comprehensive policy statements.

In cooperation with the Department of NRCD, the Coastal Resources Commission will develop a set of policies reflecting the need of additional access and based on the conclusions of the demand assessment determined in Task B.8.a. these policies will amplify the right of the public to share in the use of common water resources; particularly, those of the ocean, sounds, and rivers. These policies will go on to identify a role for the State in satisfying this need and will suggest a role for local governments that will compliment the State and Federal position on access.

Task B.8.c.      Establish funding source for land acquisition and construction of access facilities.

A source of funding must be established to acquire land to provide minimal access facilities. Presently, Federal funds, including those administered through BOR and those anticipated through the Federal Coastal Zone Management Program, would be available to the State on a 50% matching basis. A joint proposal sponsored by the N.C. Division of Parks and Recreation and supported by the Coastal Program should insure a high priority of this need. Also, through informal discussions with local government officials, several counties and municipalities are willing to contribute a generous share of the total costs in providing access, ranging between 5-10%. North Carolina's role would be to identify the remaining funds. The total amount of needed funds is unknown at present because the estimated demand has not been determined.

Task B.8.d.      Establish grant procedure for local governments.

Local governments must be given the lead role in providing access needs identified in the policy statements under Task B.8.b. Also, the effects of providing additional access could have a dramatic effect on the growth and development of a community, thus any grant procedure must require consideration of potential impacts through the CAMA planning process.

Task B.3.e.      Develop planning guidelines as part of the CAMA planning process to assist local governments in acquiring and managing access areas.

Several land use issues could develop as a result of providing additional access areas and must be anticipated through a planning process. The more critical issues include parking and protection of primary sand dunes. Several communities now have an adequate number of access areas but their use is limited because of inadequate parking for day visitors. The protection of sand dunes is also a vital issue. Constant traffic over the primary dune can quickly erode a sand dune's ability to act as a protective buffer for private property in time of storm. Finally, any grant of this type must require that areas be managed and maintained.

Task B.8.f.      Institute a uniform system of identifying public access areas.

Preliminary results of the access inventory discussed in Task B.8.a. indicate that many areas are not labeled and thus underutilized. A uniform system of labeling, similar to that developed by the Wildlife Resources Commission for boat access areas, would insure maximum public use. Providing access identification can be required through the grants procedures with assistance given to local governments by appropriate State agencies.

Task B.8.g. Publish access brochure stating access policies and identifying access areas.

Visitors to the coastal area would benefit from information on the location of access areas. This would facilitate vacation planning and could serve as a forum to point out local ordinances on surfing, the use of off road vehicles, etc. The responsibility of this function has not as yet been confirmed but could rest with either the Office of Coastal Management, Division of Parks and Recreation, or the Division of Travel and Promotions.

### N.C. Water Resources Framework Study

#### STATE ADMINISTRATIVE POLICY ON WATER RESOURCES PLANNING

State Administrative policies which affect water resources planning are presented by category below. A list of policy areas which are to be added later concludes this section.

#### 1. Projections

Water resources will be planned and managed to respond to alternative future changes in population and economic conditions, and the response will be under terms that are most efficient and equitable for the North Carolina public's benefits. The State in all its planning activities for water resources will consider a wide range of possible choices and projections so that there is reasonable assurance that the selected course of action will, regardless of any future which can reasonably develop, be a sound decision for the State. Water use projections should be consistent with State projections of population and economic activity. Although there is uncertainty, projections should be given official status.

#### 2. Integration of Planning

State water planning is interrelated, and all water planning elements dealing with water resources on a broad scale including quantity, quality, hydrology (surface and ground water), flood management, navigation, and water-based recreation will be coordinated through a single planning unit at the State level. Water resources planning must be closely coordinated with land use planning, because land use and water resources are related and interwoven.

In addition water planning will be undertaken jointly with planning for other sectors including housing, transportation, public health and industrial development at the State level and with appropriate agencies at regional and local levels.

### 3. State Jurisdiction

a. The State asserts its jurisdiction over all waters within the State and recognizes all social purposes of these waters, noneconomic as well as economic. In particular, recreation, wilderness, scenic, esthetic, water quality, fisheries, wildlife and similar instream and watershed values are social uses which require protection. As these values and rights in them are recognized and protected in natural lakes and streams, their benefits will be clearly mandated for general public use, particularly when they are uniquely suited to such uses.

b. Private social and economic uses of water for such purposes as boating, swimming, fish culture, and general recreation are recognized.

c. The State will expand its policy on State waters thus bringing more waters (as distinguished from shoreland) within the scope of public use. The State will take steps to assure public use of covered by the Submerged Lands Act\* which have a potential for and will be otherwise consistent with such public use.

d. Statewide outdoor recreation plans will include a review of beaches and shoreland to ascertain those areas that are in public ownership or subject to rights of public use; and, where public rights exist, measures will be taken to assure that public access is protected and public use controlled.

e. Where wetlands are legislatively, administratively or judicially determined to be State owned and have primary value for fish or waterfowl propagation or other wildlife purpose, they will ordinarily be reserved or otherwise protected from drainage operations and developments which would destroy or substantially impair such values.

f. Where there are no presently existing public rights of access and use of streams, lakes, reservoirs, and beaches and where such areas are particularly valuable and appropriate for public recreational use, the State will purchase access easements for public use.

g. If access easement for public recreational use cannot be acquired by negotiation and purchase, then the State will authorize eminent domain to be exercised on a selective basis, as justified by public need.

h. Whether easements for public access are acquired by purchase or condemnation, adequate provision will be made to assure that public use does not become unregulated public damage through public abuse.

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\*U.S.C.A. tit. 10 sec. 7421-26, sec 7428-38; tit. 43 sec. 1301-03, sec 1311-15

i. To assure that public use is properly controlled and to assure that adjacent landowners are protected, the State will (1) create buffer zones between areas open to use by the public and privately-owned adjacent lands and (2) include conditions or restrictions within access easements to provide reasonable landowner protection, making these provisions specifically enforceable by law enforcement personnel.

#### 4. Growth

Water resources policy and planning activity will support State and local growth policies and will assist in the development and conservation of water resources. The State will endeavor to insure that development has minimum abuse and adverse impact on social, cultural and environmental values. The State Water Plan will incorporate the necessary features to achieve these purposes.

## APPENDIX C: SHOREFRONT ACCESS INVENTORY, ANALYSIS AND RECOMMENDATIONS

Shorefront Access Inventory

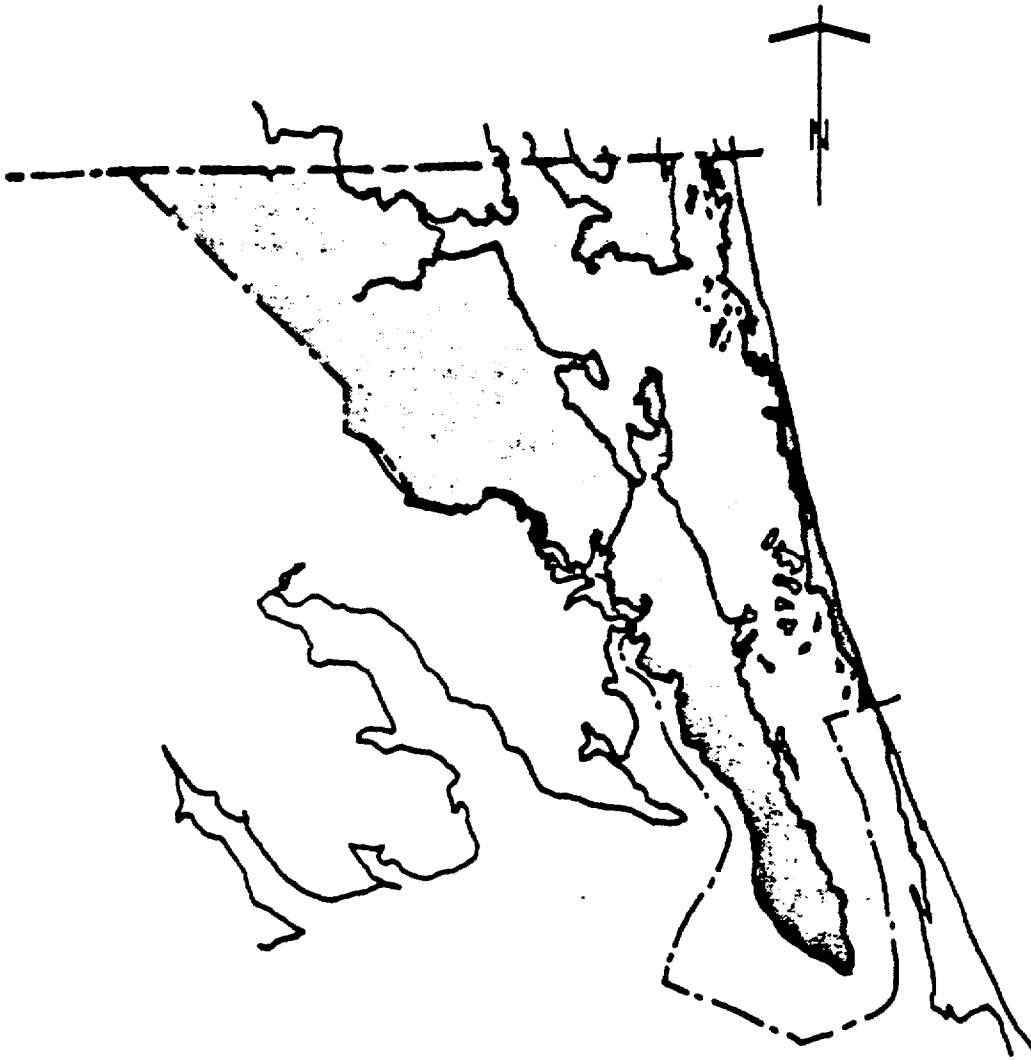
The inventory that follows was prepared in the Fall of 1977, by the North Carolina Office of Coastal Management. This study establishes the current availability of beach access, identifies areas presently experiencing access problems and predicts areas that may experience difficulties in the near future. The inventory, which gave priority to the ocean beaches because of the apparent shortage of public access, was conducted in three steps.

The first step of the inventory was to develop an access questionnaire and to solicit responses from ocean front counties and municipalities. This request covered the number and location of existing access sites, their ownership status, available parking, their management, protection of frontal dunes and other general comments. The second step of the inventory was to survey the local land use plans prepared under the planning phase of the Coastal Management Program. This study focuses primarily on the local land use plans prepared under the planning phase of the Coastal Management Program. This study focuses primarily on the local policies of the ocean and sound front areas. Finally, the third step was to review the information obtained thus far and, where needed, verify the findings.

## SUMMARY OF THE LAND USE PLANS

The State Guidelines for Local Land Use Planning require that each planning area examine the impact of seasonal visitors on the natural resources and assess the recreational needs of the seasonal and permanent residents. Through this analysis, virtually all of the ocean front committee acknowledged the increasing demand for additional beach access. However, many communities noted that because of the relatively small tax base they felt unable to afford the high price of ocean front property.

In the estuarine areas, there was little discussion of problems related to shoreline access per se. However, many of the plans did document the need for comprehensive recreation planning which would presumably include access to the estuarine shoreline. Several plans noted the proximity of boat access ramps provided by the Wildlife Resources Commission.

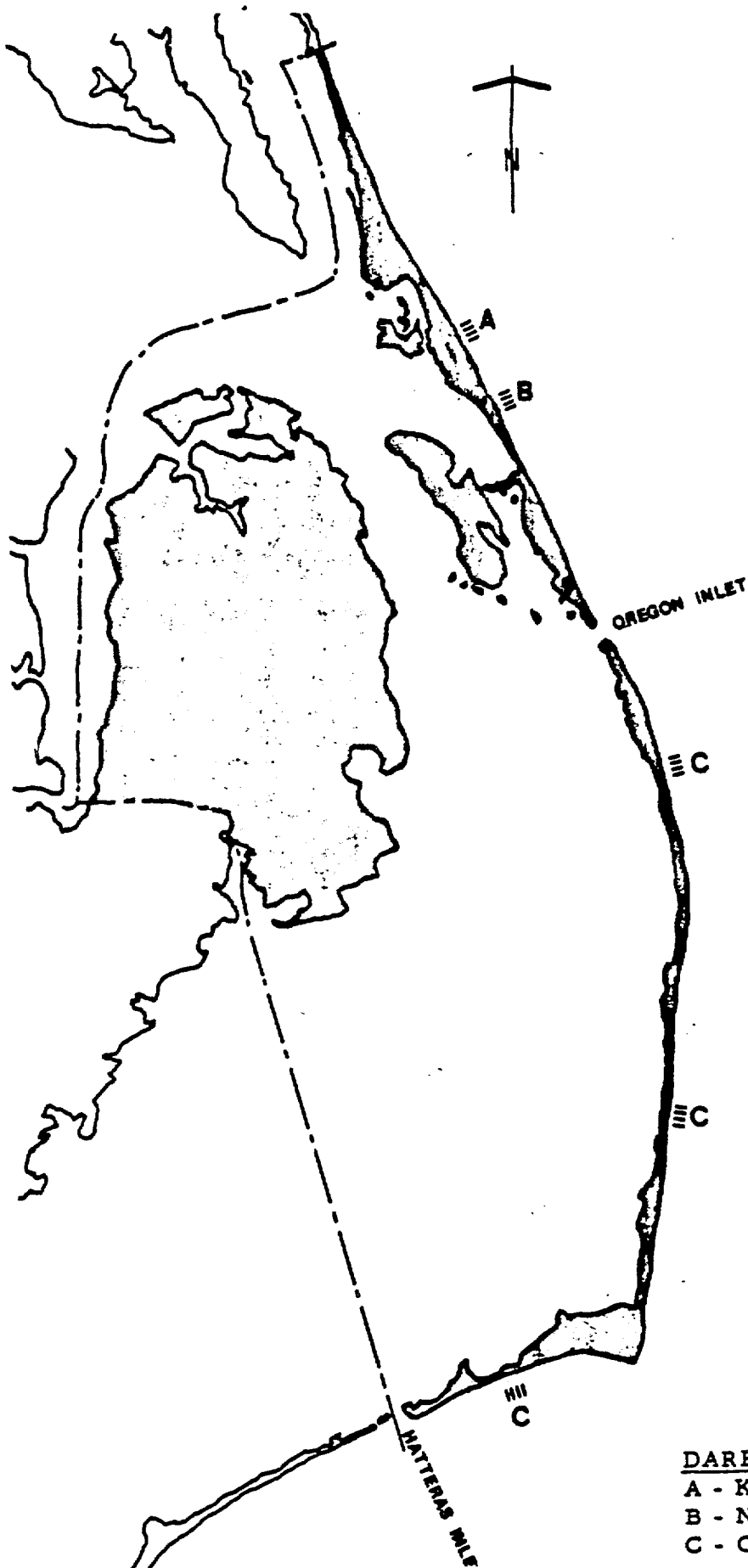


CURRITUCK COUNTY

Limited Number of Public Beach Access Points

Currituck County

The ocean shoreline in Currituck County extends from the Virginia State line to the boundary of Dare County. The county has numerous beach areas available for public use but public access points to these areas are not available. This is primarily due to the lack of State roads on the Outer Banks. The county, however, is requesting aid from the State to build roads that would make these areas accessible. The few beach access points that are available are, in most cases, restricted to permanent residents or permittees who have obtained private easement permits.



DARE COUNTY

A - Kill Devil Hills

B - Nags Head

C - Cape Hatteras National Seashore

Dare County

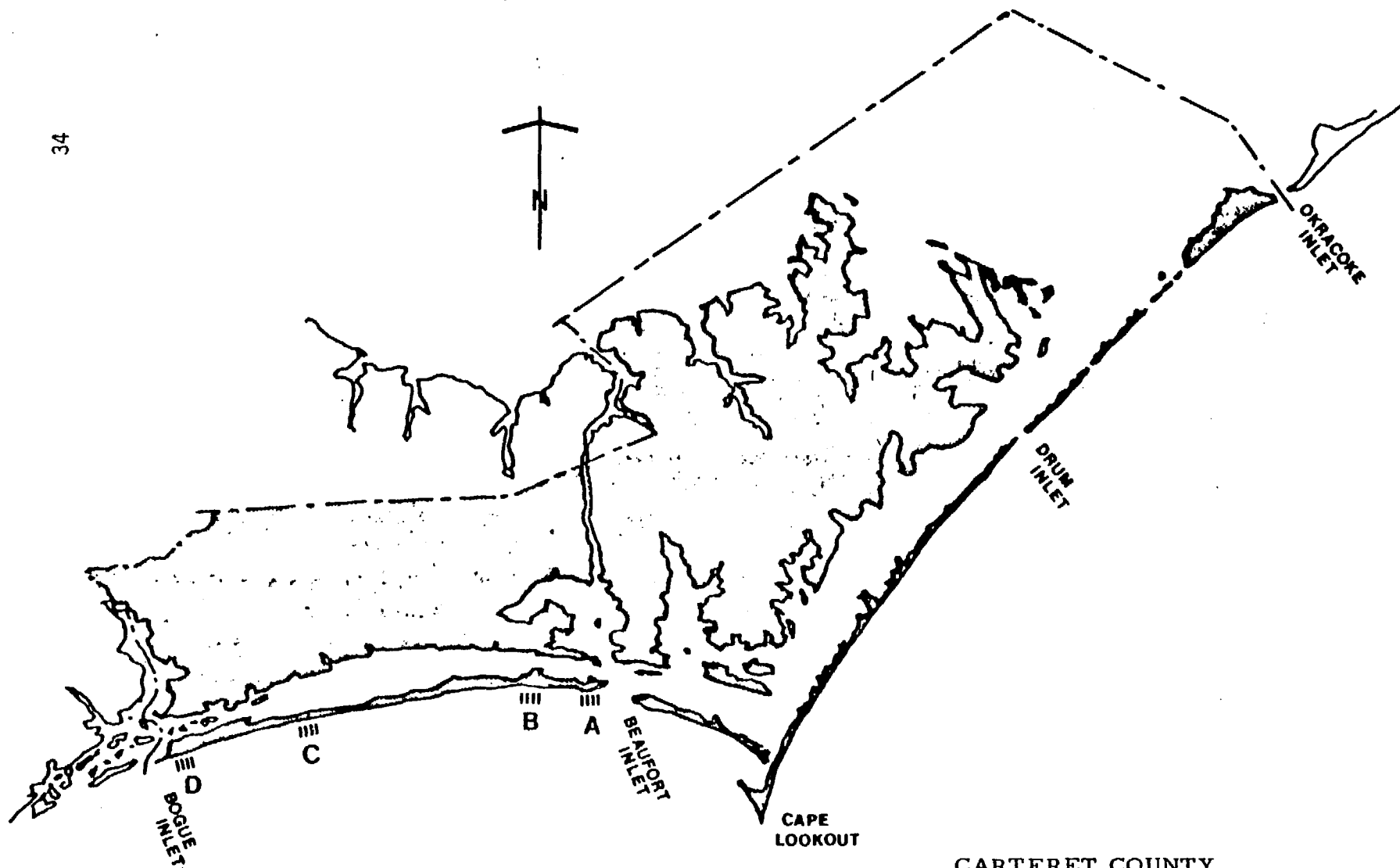
The ocean shoreline from Oregon Inlet south to Hatteras Inlet is owned and managed by the National Park Service and is developed for public recreation. Presently, the county does not have under its jurisdiction any public access points or sites to the beach or ordinances controlling beach buggies except they are not allowed on the beaches between Memorial Day and Labor Day. However, two towns, Nags Head and Kill Devil Hills have provided for public beach access.

(A) Kill Devil Hills has eighteen paved public access points with limited parking at each point (2-5 cars). These points are located in the town's jurisdiction and are marked. The beach at each access point is used for swimming, fishing and surfing; however, service facilities or constructed walkways are not available. The title to the access points are uncertain, and at the present time, the points are not managed. The local government feel that their biggest problem is the lack of sufficient parking areas at the access.

(B) Nags Head has twenty-one public beach access points which are located at street ends leading to the beach. Each street end is approximately fifty feet by one hundred feet. Out of the twenty-one access points, only five are paved. The remaining access points have clay surfaces or packed sand. The majority of the access points are marked. Public service facilities are not available at the access points and adequate parking is not available.

The titles to the access points are held by the town and each access point is managed by the local government. The beach at each public access is used for swimming, fishing and surfing. Motor vehicles are allowed to enter the beach area at certain designated ramps and are allowed to use the beach from September 8 to May 25. A town permit is required.

(C) Cape Hatteras National Seashore is administered by the National Park Service under the Department of the Interior. The seashore extends from the southern boundary of Nags Head south to Ocracoke Inlet. Beach access, parking and service facilities are available.



CARTERET COUNTY

- A - Fort Macon
- B - Atlantic Beach
- C - Emerald Isle
- D - Bogue Inlet Point

## Carteret County

Most of the southern ocean shoreline in Carteret county is privately owned. There are a number of public access points in the Fort Macon State Park area and the municipality of Atlantic Beach. Public access is also available at some of the private lots, piers and illegally used foot paths (leading from Salter Path Road to the beach). The county neither owns nor manages these points. The majority of the access points, both private and public have very limited public service facilities and parking and have been established only on paper, hence, have not been marked as being public access points. A few walkways and ramps over the frontal dune have been provided but the majority of the points do not have them.

(A) Fort Macon State Park is owned by the State and is available for public use. The beach is used for picnicking, sunbathing and fishing. Swimming is not allowed around Beaufort Inlet. A large parking area and public service facilities are available.

The area between Fort Macon and Atlantic Beach is privately owned, however, provisions have been made for public access and use.

- The Triple S Pier is privately owned but the public is allowed to use the pier and beach for sunbathing and fishing at no charge. Surfing is prohibited.
- The Club Colony Subdivision has three fifty-foot wide access points and one forty-five foot wide point which are privately owned but used by the public. The points are located at the end of street right-of-ways running to the beach and have no constructed walkways. Each point is available for bathing and a little surfing.
- Oceana Pier is privately owned but offers limited public access and facilities. The pier has a dressing room and showers, and is available for sunbathing. Surfing is not allowed. There is adequate parking behind the pier.

(B) Atlantic Beach (municipality) - The streets leading to the beach are owned by Atlantic Beach and are used by the public as access points to the beach. There are:

- four - 45 foot wide street access points
- two - 50 foot wide street access points
- one - 100 foot wide street access point

- one - 570 foot boardwalk in the central part of the town.
- one - 20 foot alley
- two - 16 foot alleys

The beach, in general, is used for swimming, surfing and fishing. There are limited service facilities around the center/amusement section and adequate parking.

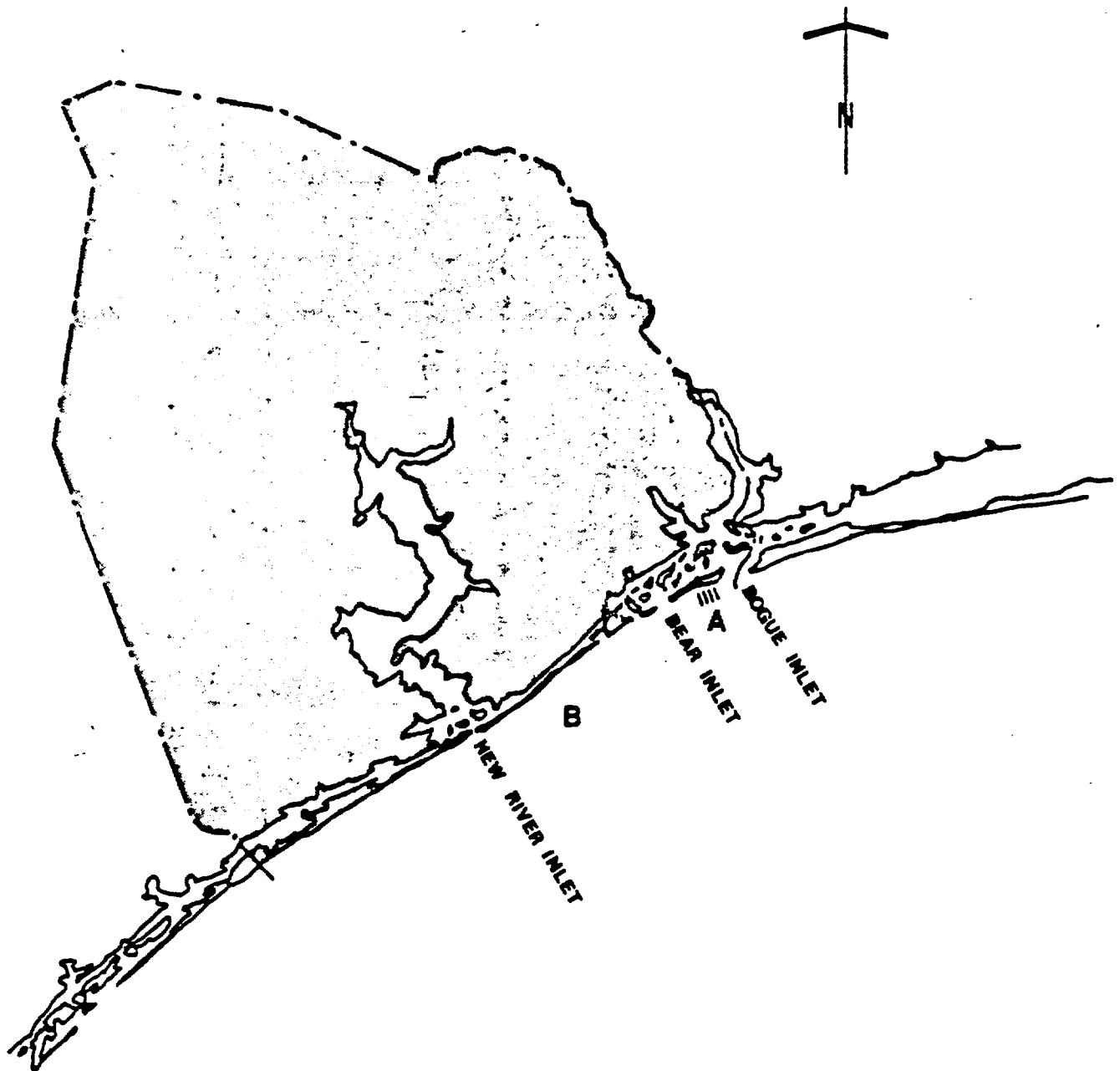
#### (C) Atlantic Beach to Bogue Inlet

Between Atlantic Beach and Bogue Inlet there are a number of footpaths leading from Salter Path Road across private property to the beach. The public use these paths illegally to gain access to the beach. They are not marked.

Whaler Pier, Iron Steamer Pier and Emerald Isle Pier are privately owned piers but are made available for public use.

- Whaler Pier and the beach around it are used by the public for sunbathing and surfing. Parking for the public is not available except along Salter Path Road.
- Iron Steamer Pier charges no fee to the public and parking is available. The pier has no public service facilities, however, the public can use the beach for swimming and fishing. Surfing is not allowed.
- The beach in and around Emerald Isle Pier is privately owned but the public is allowed to use the area for swimming and fishing. Public Service facilities are not available, however, parking is adequate.
- The Indian Beach State Road (SR1192) is used by the public to gain access to the beach for bathing and dune buggy use.

- (D) The tip of Rogue Bank is privately owned but the area is available for public use. The beach around Bogue Inlet Pier is used by the public for swimming, fishing and surfing. Public service facilities and parking have not been provided. The end of the bank is privately owned but is available for public use. There are three - five foot pathways and one - 25 foot pathway leading to the beach. Facilities for the public have not been provided.



ONSLOW COUNTY

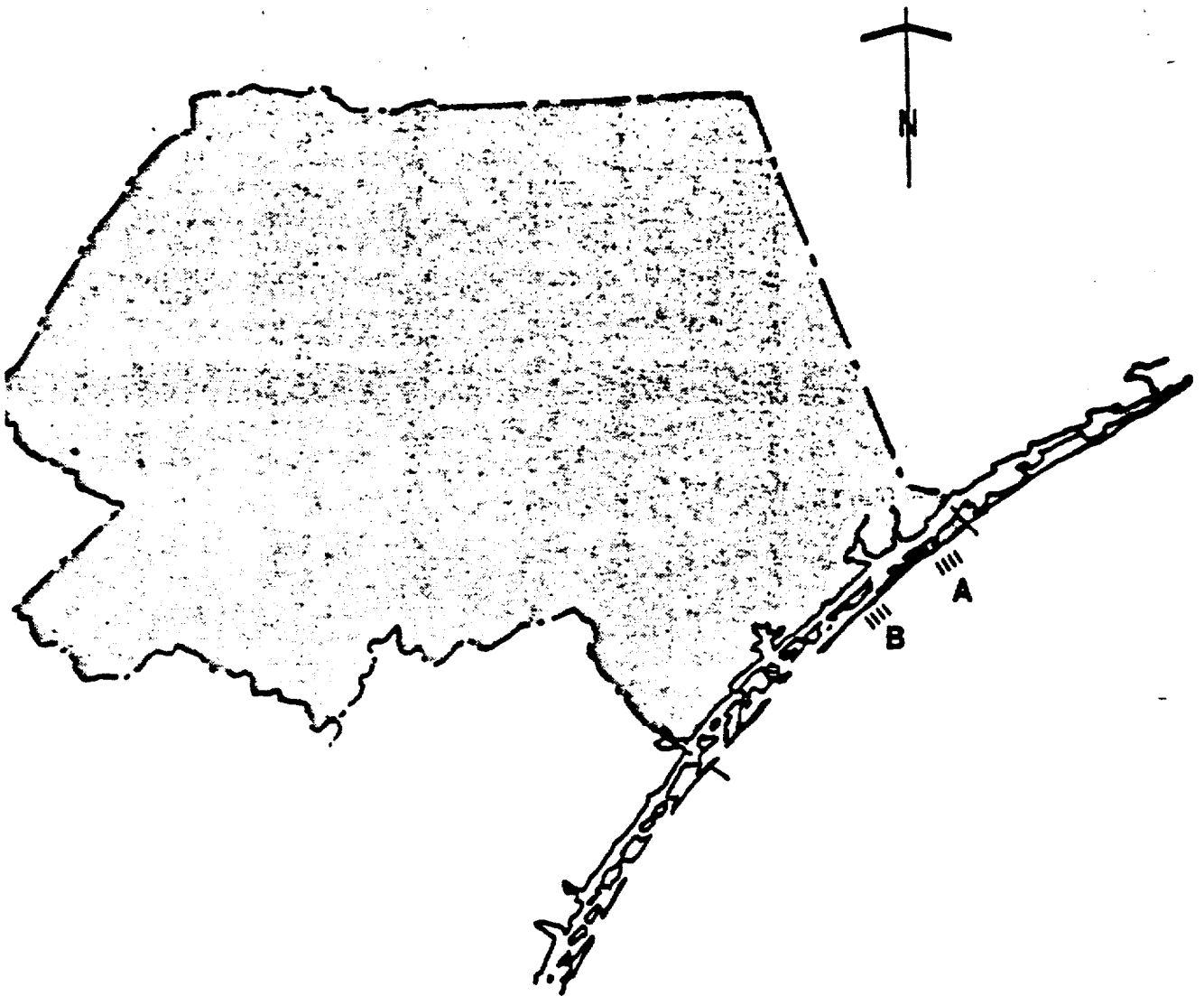
A - Hammocks Beach State Park  
B - Camp LeJeune Military Base

Onslow County

The ocean shoreline of Onslow County extends from Bogue Inlet to about twelve miles southwest of New River Inlet, a distance of about twenty-seven miles. There are thirty-six unmarked beach access points in the southern portion of the county. Twenty-one of the points have crosswalks to the beach. There are three dune buggy access points in this area but the titles to these points are questionable; however, they are used by the public.

(A) Camp Lejeune Marine Corps Base occupies most of the northern portion of the shoreline from Bear Inlet to New River Inlet. This area is primarily used for military maneuvers and the public is not allowed on the beach.

(B) Hammocks Beach State Park is owned and administered by the State for public use. Facilities for the public include: beach access points, a bathhouse, protected swimming area, picnic area, and a refreshment stand.



PENDER COUNTY

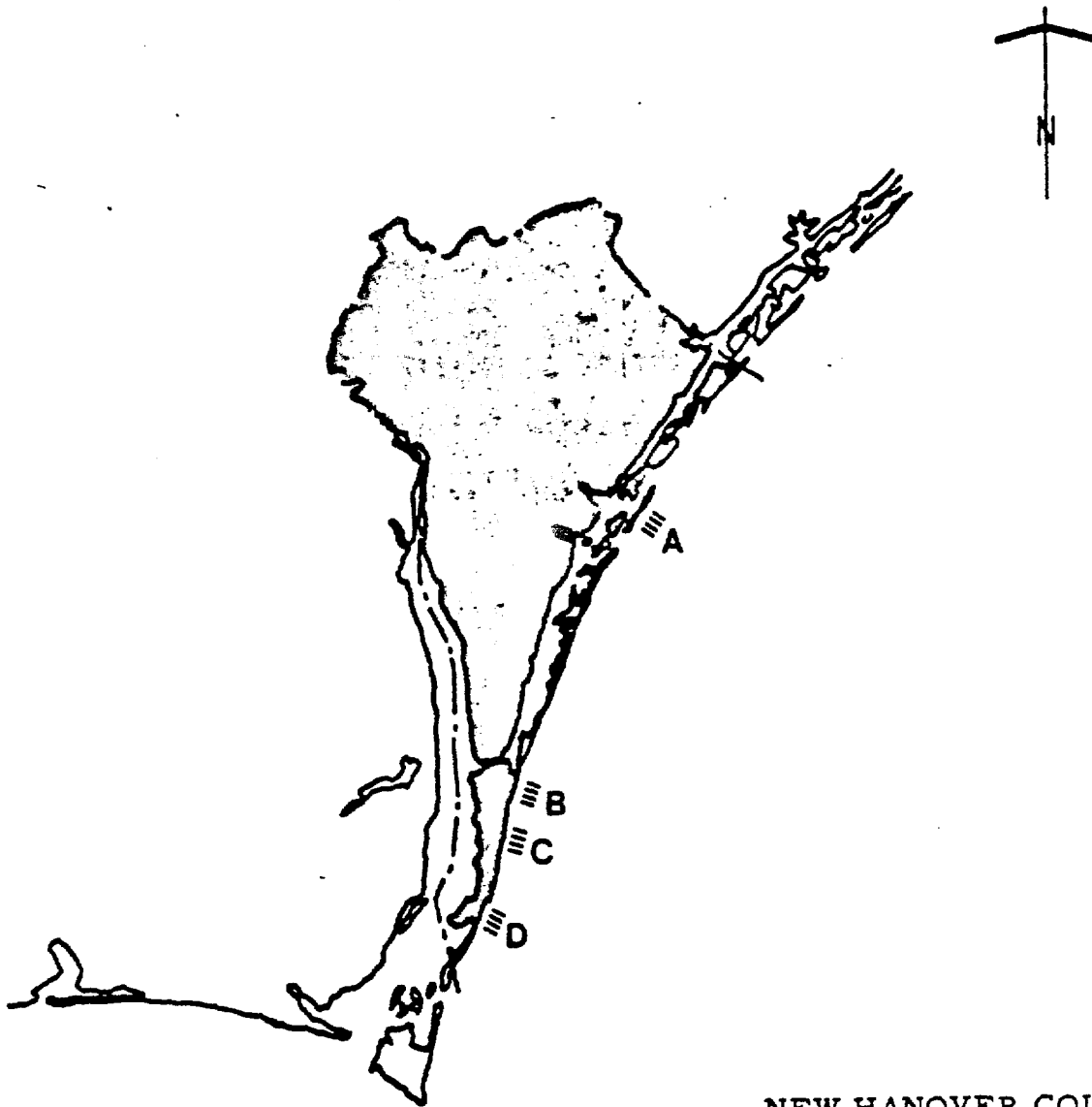
A - Surf City  
B - Topsail Beach

Pender County

Most of the shoreline of Pender County is privately owned; however, two towns, Surf City and Topsail Beach have areas that are available for public recreational use. The county does not have recreational sites or beach access points under its jurisdiction.

(A) Surf City has thirteen unmarked access points which are located at the end of streets leading to the beach. There is only one controlled public access for vehicles. Each point lacks service facilities and constructed walkways. The beach at each access point is used for swimming, fishing and surfing. Surf City owns and manages each of the access points within its jurisdiction, except one which is owned by the State.

(B) Topsail Beach has twelve unmarked public access points. Each point lacks service facilities and walkover structures to the beach; however, the town is planning to build walkways to protect beach vegetation when funds are available. The beach at each access site is used for swimming, fishing and surfing, and each point is owned by the town.



NEW HANOVER COUNTY

- A - Wrightsville Beach
- B - Carolina Beach
- C - Kure Beach
- D - Fort Fisher

## New Hanover County

The northern portion of the ocean shoreline in New Hanover County is privately owned, hence, public access to the beach is not available. The majority of the public beach access points are located in the Town of Carolina Beach, Wrightsville Beach, Kure Beach and the State-owned Fort Fisher historic site.

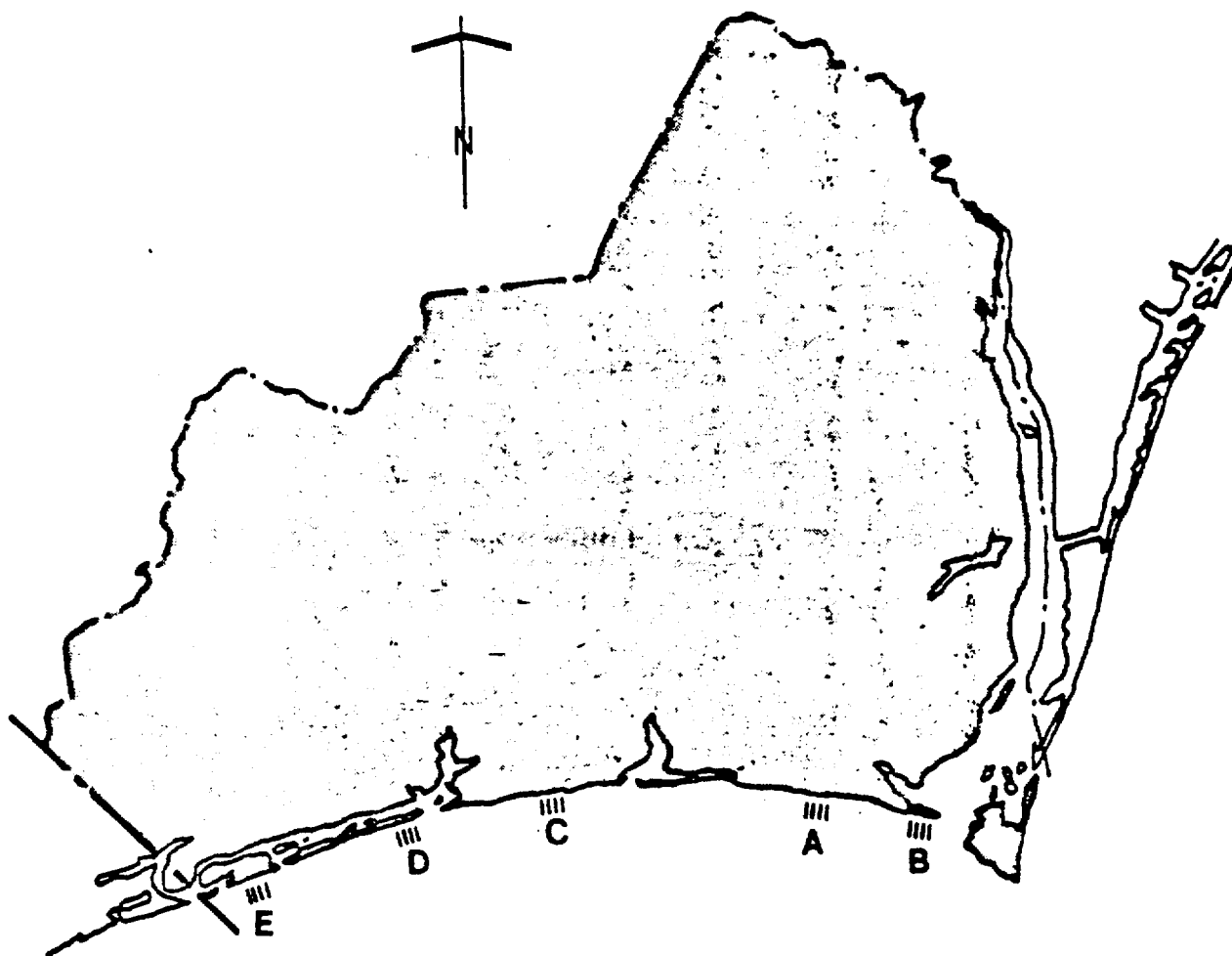
(A) Wrightsville Beach has thirty marked public access points which are located at the end of residential streets leading to the beach. Most of the points lack adequate parking and constructed walkways. Limited service facilities (rest rooms only) are available. The beach at each access point is available for swimming, fishing and, in some areas, surfing. Beach vehicles are prohibited on the beach at any time. The access points are owned and managed by the town. The town's biggest problem is the lack of adequate constructed walkways, public service facilities and parking lots.

(B) Carolina Beach has thirty-one marked public access points which are located at the end of residential streets. Some of the access points have constructed walkways and limited parking, although, the street ends are used quite frequently. There are a few public service facilities in the form of bath houses and rest rooms. The beach at each point is available for swimming, fishing and surfing. Most of the points are owned and managed by the town, however, the titles to four of the points are questionable.

(C) Kure Beach has eight marked public access points leading to the beach. Each point has a constructed walkway in the form of stairs over the first sand dune adjacent to the beach.

The titles to these areas are unknown but each point is managed by the town. The beach at each access point is available to the public for swimming and fishing. The only public service facility available is a rest room which is located at the pier. This pier, which is used by the public, is considered a public access point.

(D) Fort Fisher State Park is owned by the State and is developed for public recreation. Public picnic areas, a museum, public beach, and nature trails are available.



BRUNSWICK COUNTY

- A - Long Beach
- B - Caswell Beach
- C - Holden Beach
- D - Ocean Isle Beach
- E - Sunset Beach

## Brunswick County

The ocean shoreline extends from the Cape Fear River to Little River Inlet, a distance of approximately forty-one miles. There are no county-owned access points or sites; however, five municipalities in the county have access points and ordinances regulating activities in their jurisdiction.

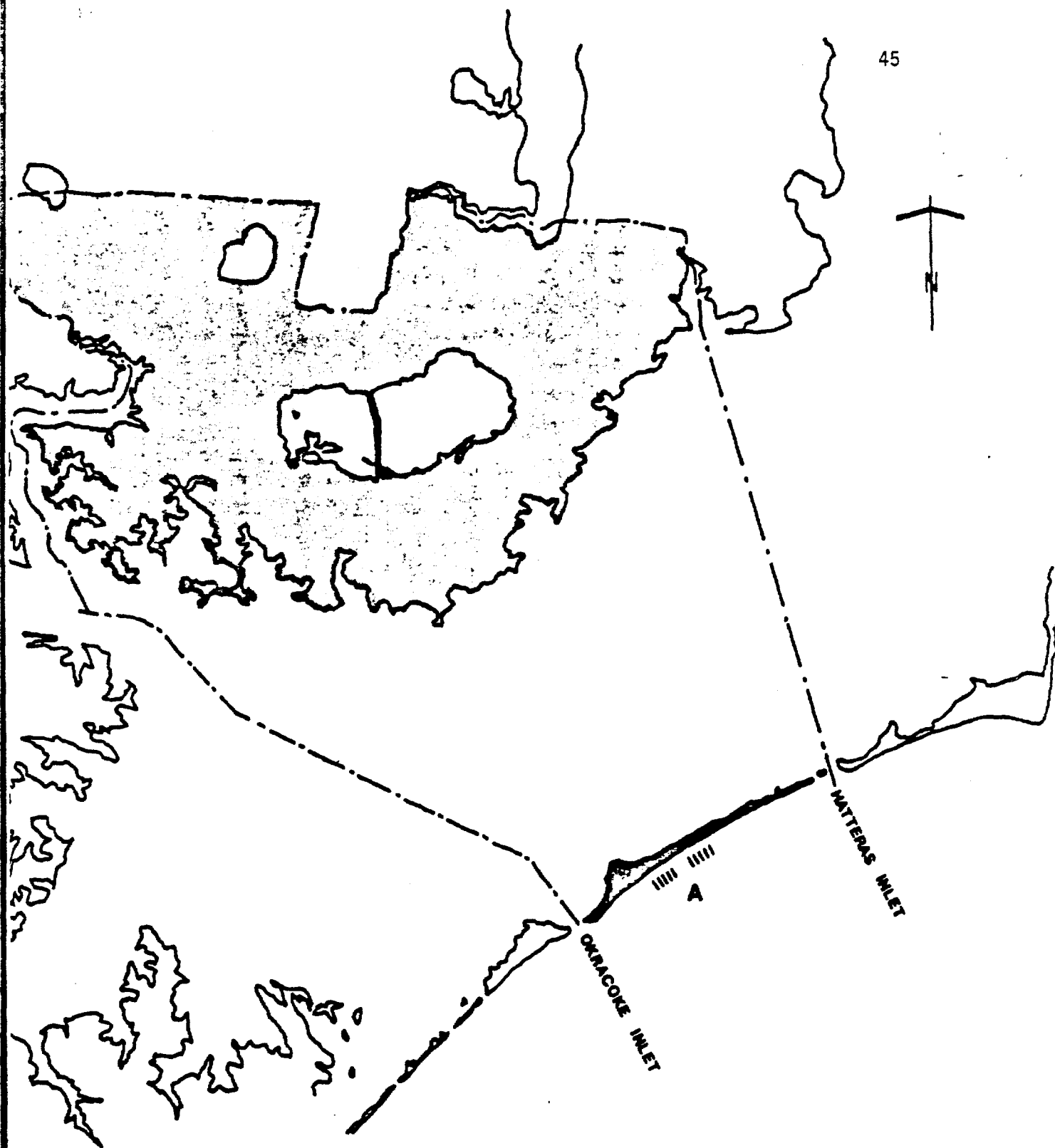
(A) Caswell Beach is a residential town and the ocean shore has been zoned mostly for commercial use. There are no public access points within the jurisdiction of the town. The only area that could be used for public recreation at the present time is experiencing heavy erosion, the town has an ordinance prohibiting vehicles on the beach throughout the year.

(B) Holden Beach has approximately twenty public access points that are located primarily at the end of street leading to the beach. Most of these points are owned and managed by the town whereas others are maintained by the individual owners. Public service facilities (bathhouse and rest rooms) are available only at the pier. The town is in the process of marking all points as public access.

(C) The Town of Long Beach has sixty public access points and one private access which is available for public use. Each access point is approximately fifty feet wide and is located at the end of residential streets leading to the beach. All points are marked and twenty-five have constructed walkways over the first sand dune. Each access point is owned and managed by the town and each site is used for swimming, fishing and surfing. Parking is available but is not adequate. Public service facilities are not available.

(D) Ocean Isle Beach has thirteen marked public access points in its jurisdiction. The access points are located at the end of streets leading to the beach and lack constructed walkways. They are, however, in the planning stage. Swimming, fishing and in some cases, surfing are available at each site. The access points are owned and managed by the town.

(E) Sunset Beach has twenty-four marked public access points. The access areas are all ten foot walkways and are located at the end of streets leading to the beach. The access areas are used for swimming, fishing and surfing. Parking is available only at one of the access points and that one is privately owned. Developers hold the titles to the access areas and they are not managed.



HYDE COUNTY

A - Cape Lookout National Seashore

# OWNERSHIP OF NORTH CAROLINA LAND ADJACENT TO OCEAN BEACH SHORELINE

County	Total Ocean Shoreline (mi.)	b PUBLIC				c PRIVATE			
		Federal (mi.)	% Total	State (mi.)	% Total	Developed (mi.)	% Total	Undeveloped (mi.)	% Total
Currituck	22.3	0	0	0	0	22.3 <sup>d</sup>	100	0	0
Dare	81.3	51.9	64	0	0	29.4	36	0	0
Hyde	15.8	15.8	100	0	0	0	0	0	0
Carteret	78.6	51.8	66	1.5	2	25.3	32	0	0
Onslow	25.8	11.5	45	3.1	12	11.2	43	0	0
Pender	14.6	0	0	0	0	10.8	74	3.8	26
New Hanover	28.1	0	0	12.3	44	15.8	56	0	0
Brunswick	41.4	0	0	0	0	40.9	99	.5	1
TOTAL	307.9	131.0	43	16.9	5	155.7	51	4.3	1

- The State of North Carolina holds title to all oceanfront beaches up to the mean high tide (MHT) line. For that reason, all figures included here refer to ownership of ocean shoreland above MHT. No attempt has been made to define the landward extent of shoreland. Also, there are numerous minor exceptions to all categories such as private or State inholdings in National Seashore land and undeveloped (with no recorded subdivisions and no structures) areas having otherwise developed beaches. These areas, however, because of their small size and scattered distribution, need to be investigated further on a county by county basis.
- "Public" land refers to land owned by a political subdivision as opposed to land owned communally by property owners in a residential subdivision or users of commercial camping facilities and the like.
- "Developed" here refers to barrier islands to which there is State maintained automobile access and on which there are State maintained roads. Both Bald Head Island and Figure 8 Island, however, though access and roads serving both are private, are located in the private developed category.
- Currituck County is located on a barrier island to which there is automobile access, but there are no State maintained roads along the shoreline within the county. Because much of the county shoreland is currently being developed (subdivisions platted and lots sold), however, it is included in the private, developed category.

### Local Ordinances Regulating Beach Use - Brunswick County

Brunswick County has no ordinances regulating the use of the beach, however, three municipalities have passed ordinances regulating its use in their area.

Sunset Beach - Ordinance #77.9.5-4 prohibits the operation or use of vehicles on the beach throughout the year.

Long Beach - The Town of Long Beach Ordinance prohibits the operation of vehicles on the beach from the first day of June to the day after Labor Day. During the remaining period of time a permit is required and access to the beach is to be made at designated dune crossings. The fee for a permit is \$3.00. Official vehicles are not prohibited from operating on the beach.

Caswell Beach - The Town of Caswell Beach Ordinance is similar to Sunset Beach in that it prohibits motor vehicles on the beach throughout the year.

### Local Ordinances Regulating Beach Use - Pender County

The county does not have an ordinance regulating motor vehicles or activities on the beach.

Surf City - The Town of Surf City Ordinance is quite comprehensive. The ordinance has nine (9) sections governing the use of the beach or adjacent waters.

- Sec. 7-7 Prohibits the disposition of trash on the beach.
- Sec. 6-8 Prohibits food or beverage containers on the beach.
- Sec. 6-9 Prohibits cooking devices on the beach.
- Sec. 6-10 Prohibits motor vehicles from crossing the beach except at the designated crossing area.
- Sec. 6-11 Restrict all types of vehicles except plant manufactured four-wheel drive vehicles.
- Sec. 6-13 Prohibits all vehicles on the beach from the 15th of May until the 10th day of September. During the rest of the year, vehicles are only allowed on the beach from one hour before sunrise until two hours after sunset.
- Sec. 6-14 Prohibits the use of motor vehicles on the beach for any purposes other than commercial or sports fishing. No vehicles are to be driven on the dunes while operating on the beach.
- Sec. 6-15 Prohibits overnight parking on the beach.

Topsail Beach - The Town of Topsail Beach specifies in its ordinance the requirements for both mobile home and recreational vehicle parking areas. Generally, it prohibits parking in nondesignated areas, major repairs on vehicles in designated area, and the amount of time (7 days) a vehicle can remain parked. The ordinance also defines a mobile home and a recreational vehicle, and the amount of space (not less than 7,000 square feet) each vehicle should occupy in a designated mobile home or recreational vehicle parking area.

### Currituck County

The County of Currituck has an ordinance which covers the use of motor vehicles along the Outer Banks Barrier Strand. The ordinance has seven sections which describe in detail the nature of each restriction and the limits imposed.

- Section 1 - Limits the operation of vehicles on the beach except on a public road, dedicated right-of-way, or on the foreshore.
- Section 2 - Requires the operator of any vehicle to have a valid driver's license of the State in which he resides.
- Section 3 - Requires any power driven vehicle to be registered.
- Section 4 - Limits the speed of motor vehicles on the beach to 35 miles per hour and 15 miles per hour when located within 300 feet of pedestrian, sunbathers or other person using the beach. This section also requires the operator to operate the vehicle in a safe and sane manner.
- Section 5 - Exempts commercial fishermen from the first three requirements when they are engaged in fishing or the setting of seines from or in the Atlantic Ocean.
- Section 6 - Exempts all restrictions when a vehicle is being operated on private property.

Holden Beach - The ordinance regulating motor vehicles on the beach strand within the town limits states in each section that:

- Section 1 - Vehicles are restricted on the beach except between Lockwood Folly Inlet and Shallotte Inlet. A permit is required for this area.
- Section 2 - Unlicensed vehicles are prohibited on the beach strand.
- Section 3 - States the conditions for permits that will allow the operating of vehicles on the beach.
- Section 4 - Gives the cost of a permit; property owners - \$5.00, non-property owners - \$10.00.
- Section 5 - Exempts public vehicles on the beach strand.
- Section 6 - States the penalty for violating the ordinance regulating motor vehicles.

### ANALYSIS AND RECOMMENDATIONS

The following classification system was used to organize the information obtained from the land use plans and access questionnaires. Each category is followed by a statement of findings and a list of recommendations.

#### Shorefront Access: Federal

Description - These are lands owned and managed by the Federal Government and used to some extent by the public for access purposes. Among the more noted Federal holdings, are two National Seashores, Cape Lookout and Cape Hatteras and several wildlife preserves.

Statement - The Federal Government being the largest land holder in the coastal area, assumes a leading role in providing public access. In particular, the National Seashore is a tremendous resource providing ocean as well as sound access. Also, the wildlife refuges offer limited access to the sounds.

Recommendations - Whereas the Federal Government plays a leading role in providing beach access, the State of North Carolina merely requests that the various Federal agencies support the efforts of the State and local governments to acquire and maintain access rights for the public.

#### Shorefront Access: State

Description - These are lands owned by the State and include park areas managed by the Division of Parks and Recreation and a number of public boat ramps managed by the Wildlife Resources Commission.

Statement - In comparison to the Federal holdings, North Carolina has title to a very small amount of ocean and sound front property. A number of years ago this property was relatively low but as public demand increased the price of this limited resource skyrocketed. Today, the State is faced with a limited budget, high shorefront access costs, and the need to balance recreational demands Statewide. In the northern half of the ocean shoreline the two Nation Seashores satisfy a great deal of the public's demand for water access. However, in the southern half of the ocean shoreline the three State parks do not satisfy the access demand, leaving local governments to carry the heavy burden of providing shorefront access. This is particularly true in those areas closest to the urban center of Wilmington and Jacksonville.

Recommendations - There are a number of courses of action available to the State to address these problems:

1. First, the State should carefully study the feasibility of establishing a new ocean or sound front park in the southern half of the coastal area. A cursory review of land prices shows this to be uneconomical as the cost per acre of land is many times greater than in other sections of the State. Through careful study, however, the State may be able to acquire such a park through gifts, by requiring a park entrance fee or by some other innovative method.
2. Second, working through the North Carolina SCORP a source of State matching funds should be established to qualify for Federal funds. The first step of this process has already been undertaken by including a section in the revised SCORP specifically addressing beach access.

3. Third, beach access can be promoted through the tools established by the CAMA including, regulation with Areas of Environmental Concern, local land use planning, and policy development. The Coastal Resources Commission designated Ocean Hazard Areas and Estuarine Shorelines as Areas of Environmental Concern and stated in the land use standards that highest priority of land use allocation shall be given to recreational, rural and conservation activities in those shoreline areas exhibiting a significant erosion rate (7 NCAC 71.0209 (e)(2)). As a result, in weighing the merits of proposed development provisions for public access are heavily counted in favor of a project. In this action of designating beach areas as AEC's the Coastal Resources Commission has fulfilled the Federal requirement as set forth in 920.17 (a)(4).

The land use planning tool is another avenue through which the Coastal Resources Commission can address beach access. This process begins with the Commission amending the State Guidelines for local Land Use Planning to reflect shorefront access concerns. This, in turn, is followed by planning grants to local governments for the access study and by incorporating this study with the local land use plan. The Commission must then review the local plan to insure that the communities have properly addressed the issue both in terms of consistency within the planning area and in terms of regional consistency. As revealed through the questionnaire, the Guidelines must require consideration of a number of access-related issues;

- each community's regional responsibility for providing access;
- mitigation of conflicting recreational uses;
- management of access sites;
- adequate parking and the control of traffic and day visitors;
- protection of frontal dunes and identification of areas where use to be discouraged for environmental, historic, ecological or cultural reasons;
- additional planning and implementation needs, including a discussion of the costs involved in providing adequate access.

Finally, policy development is the third tool available to the Coastal Resources Commission in addressing shorefront access. It is the position of the commission that beach access is for the most part a local responsibility and that the State should not take an overbearing position in forcing access. However, there are a number of policies that the State must take in order to supplement local actions.

## Shorefront Access: Local

Description - These are lands in private or public ownership used by the public for shorefront access.

Statement - As the demand for shorefront access increases, local governments are faced with a severe problem of providing adequate access, parking, and community facilities to not only resident property owners but also to a large seasonal or day visitor population. From the local perspective, the key to the problem is to increase the tax base so that sufficient facilities can be provided and the integrity of the local environment can be protected. By improving services, however, local governments have found that the day visitor population increases at a much greater rate than the resident population and thus the local resources are overused. In addressing this issue, many communities are considering innovative methods of charging day visitors so that they will not be as great a burden on the community.

Through the beach access questionnaire it was found that the access areas could be divided into two types, regional access areas and community access areas; where

Regional Access Areas - are clear points of entry in public or private ownership that are utilized and available to the public for access; and

Community Access Areas - are not clear points of entry but are either available to the public for access or legally unavailable (i.e., not in public ownership) to the public for access.

As documented through the inventory, the majority of access areas fall into this second group. Several communities have made the decision to restrict access by not labeling access sites. This appears to be a satisfactory solution in the short run, but it is forcing day visitors to trespass on private property. In other situations, access ways have been dedicated to residents of a specific subdivision and not to the general public. There again, day visitors are using these access ways illegally.

Overall the trend among communities is to provide more regional access areas.

## Shorefront Access Areas: Commercial

Description - Access areas in private ownership that provide access to the public. Examples of commercial access areas are motels, campgrounds, fishing piers, private game clubs, boat clubs, private boat ramps, etc.

Statement - As the demand for water front access is recognized the private sector is playing an increasing role in meeting this public need.

Recommendation - The private sector should be encouraged and if necessary incentives should be provided to insure their role in providing adequate beach access.

#### Areas for Preservation and Protection

Description - These are beach areas where access should be restricted or discouraged for environmental, historical, ecological, or cultural reasons.

Statement - Through the local land use planning effort a number of beach areas and associated lands were identified as areas for protection and/or preservation. Among these were the fragile primary sand dunes located just landward of the beach, some nesting areas for birds and sea turtles, and certain islands which for the most part are surrounded by valuable marsh grasses.

At the present time, the N.C. Natural Heritage Program's inventorying the unique natural resources of the State which includes many islands. This information is used to assess the priorities in natural areas protection. To assist in this effort the Coastal Resources commission designated a group of AEC categories to which special fragile Coastal Resource Areas can be nominated under this regulatory frame work.

Recommendations - The Coastal Resources Commission and the Department of Natural Resources and Community Development should continue to support the efforts of the Heritage Program.

That State and local policies should be adopted to further protect ecologically significant islands and important nesting areas.

## B. ENERGY FACILITY SITING PLANNING PROCESS

### Introduction

North Carolina has developed the following energy facility planning process to fulfill the requirements of Section 305(b)(8) of the Coastal Zone Management Act of 1972, as amended. Full explanations of the planning process follow the summaries.

To meet the requirements of Section 305(b)(8) of the CZMA, North Carolina was required to submit a description of a planning process that is capable of anticipating and managing the impacts from energy facilities in or affecting the State's coastal zone. The process must include the following elements:

- "1.) Identification of energy facilities which are likely to locate in, or which may significantly affect, a State's coastal zone."

North Carolina relies upon forecasts supplied by the utility companies to the Utilities Commission to determine the need to locate electric generating facilities and transmission lines. The identification of other energy facilities is determined through studies or recruitment efforts of the State Department of Commerce. A summary of expected facilities is found in Section 1 of this chapter.

- "2.) Procedures for assessing the suitability of sites for such facilities"

North Carolina relies upon several techniques to assess the suitability of sites to support energy facilities. Environmental review of impacts (including consideration of alternate sites) is accomplished through a combination of the Federal EIS process and State EIA procedures. In addition, feasibility of a specific site location is further determined by the permit process. To further aid in siting decisions, land use planning efforts will be directed to designating areas suitable for industrial development. Section 2 outlines the present process and discusses these provisions in greater detail.

- "3.) Articulation of State policies for managing energy facilities and their impacts, including a clear articulation of policies regarding conditions that may be imposed on site location and facility development."

Many State policies on energy facility siting have been derived from various regulatory programs. In addition, the Coastal Resources Commission,

as a policy-making body, has drawn some preliminary policies concerning siting. After public hearing they will be incorporated with the CZM plan and State guidelines. Section 3 discusses these policies.

- "4.) Identification of how interested and affected public and private parties may be involved in the planning process and a discussion of the means for continued consideration of the national interest in the planning process."

North Carolina gives interested and affected parties the opportunity to become involved in the process through various hearing and notice provisions provided in the EIS-EIA and permit phases. In addition, national interest considerations are given force through the CRC's authority to designate "Key Facilities" as AEC's.

- "5.) Identification of legal authorities and management techniques that will be used to implement State policies and procedures."

This requirement is met by listing existing regulatory authorities that are available to the State. A discussion of these is found in Section 2.

#### A NOTE ON ORGANIZATION

The format of this energy chapter has been organized so that sections meet certain Federal requirements. Section 1 discusses the need to locate additional energy facilities in or near the coastal zone and will address the (a)(1) requirement of Federal Register Section 923. 14. Section 2 discusses what North Carolina has to offer in planning and managing for energy related facilities and will address (a)(2), (a)(5) and portions of the (a)(4) requirements. Section 3 discusses policies relative to energy facilities and will address the (a)(3) requirement. Finally, Section 4 discusses the national interest in energy facility siting and addresses the remainder of the (a)(4) requirement. The chart below provides easy reference.

<u>Section</u>	<u>Requirements</u>				
	1	2	3	4	5
1. Existing Facilities Projected Demand/Anticipated New Facilities	x				
2. Impacts and Management Controls - The Present Process		x		x	x
3. Policies Affecting Siting			x		
4. National Interest Considerations				x	

## Section 1: Energy Facilities - Anticipated New Facilities

### Definition of Terms:

1. Electric generating facility: any facility designed for the production and/or transmission of electricity.
2. Gas facility: all facilities owned by a gas utility for the production, storage, transmission or distribution of gas.
3. Oil refining facility (oil refinery): any facility which is used or capable of being used for the purpose of refining oil.
4. Oil terminal facility: any facility which is used for the purpose of transferring or transporting of oil.
5. Oil storage facility: any facility on a single site capable of storing in excess of one million gallons of crude petroleum or petroleum fuels or oil or their derivatives.

### Identification of Energy Facilities.

The following subsections provide a detailed description of seven types of facilities or activities which have the potential to affect North Carolina. Oil terminals; tank farms; oil refineries; deep water ports; electric generating facilities; OCS exploration and development; and peat mining. Included under each are potential future needs, and siting parameters. This information on facilities exclusive of electric generating facilities has come from various sources; special reports; information available through the N.C. Dept. of Commerce Energy Division; Federal contacts; environmental impact statements; and limited forecasts supplied by the N.C. Energy Policy Council in their annual reports. The section on future demand for electric generating facilities is based on forecasts required by the N.C. Utilities Commission in their regulations pursuant to the State Utilities Act (R8-43).

### Electric Generating Facilities

Electric generating facilities in North Carolina consist of oil, gas and coal fired fossil fuel facilities, plus hydro and nuclear facilities. Most plants contain several units. Plants deliver electricity to the consumer through a grid system of transmission lines with capacities ranging from 69-530 kv. Current plant sizes emphasize a capacity of 2000 MW for coal burning and nuclear. All potential hydro sites are presently in use. Oil and gas fired facilities, except where used to meet peak demand, are not being considered.

The major suppliers of electricity in the coastal area are Carolina Power and Light (CP&L) and Virginia Electric Power Company (VEPCO). VEPCO has only a few small plants in coastal North Carolina, most of its

plants being located in Virginia and West Virginia. CP&L services the majority of the population in the coastal region. The CP&L service area includes South Carolina and parts of the Piedmont and Mountain areas in both States. Because the service area is not limited to the coastal area of North Carolina, plants could be built outside the area to meet demand within the coastal region. The predominant constraints on siting are proximity to the power grid, availability of land and water, and proximity to major transportation routes.

Current Facilities: Only CP&L is likely to meet future demand (within the next 15-20 years) by building plants in North Carolina's coastal area. According to the Utilities Commission's Public Staff, CP&L 1978 electric demand is estimated at 5900 MW. Currently that demand is capable of being met with an ample reserve. CP&L plants, with their capacities are as follows on the next page.

<u>Station</u>		<u>Unit Type</u>	<u>MW Cap</u>	<u>Fuel</u>	<u>Transp.</u>
Asheville	1	ST	198	Coal	RR
	2	ST	194	Coal	RR
Brunswick	1	NB	790	Ur	Truck
	2	NB	790	Ur	Truck
Cape Fear	3	ST	32.5	Coal	RR
	4	ST	32.5	Coal	RR
	5	ST	143	Coal	RR
	6	ST	178	Coal	RR
Lee	1	ST	79	Coal	RR
	2	ST	76	Coal	RR
	3	ST	252	Coal	RR
Robinson	1	ST	174	Co	RR
	2	NP	665	Ur	Truck
Roxboro	1	ST	385	Co	RR
	2	ST	670	Co	RR
	3	ST	650	Co	RR
Sutton	1	ST	97	Coal	RR
	2	ST	106	Coal	RR
	3	ST	385	Coal	RR
Weatherspoon	1	ST	49	Coal	RR
	2	ST	49	Coal	RR
	3	ST	78	Coal	RR
Blewett	1-6	HY	22	Water	
Marshall	1-2	HY	1	Water	
Tillery	1-4	HY	86	Water	
Walters	1-3	HY	105	Water	
Blewett	1-4	IC	52	F02	Truck
Cape Fear	162	ICLCW	84	F02	Truck
Darlington	1-6	IC	312	F02	RR
Darlington	7-11	IC	262	F02	RR
Lee	1-4	IC	91	F02	Truck
Morehead		IC	15	F02	Truck
Robinson		IC	15	F02	Truck
Roxboro		IC	15	F02	Truck
Sutton	1,2A,2B	IC	64	F02	Truck
Weatherspoon	;-4	IC	140	F02	Truck

## TOTALS:

ST = 3,575

N = 2,245

HY = 266

IC = 1,050

7,336

The Utilities Commission has operated under the assumption that a 15% reserve capacity is considered necessary to insure reliable service.

1992 Demand: The Utility Commission requires that utilities file 10 year plans. So far, projections for CP&L reach 15 years. The Public Staff anticipates a 6.7% yearly growth rate through 1992. CP&L's own projections show a declining rate from 6.5% per annum in 1978 to 5.6% by 1992. Based on this information, the staff scenarios are as follows:

<u>YR.</u>	<u>6.7%</u>	<u>4.4%</u>
1978	5,970	5,841
1980	6,792	6,360
1985	9,375	7,870
1990	12,793	9,733
1992	14,486	10,604

To build a system to meet 1992 demand, peak output must equal 16,659 MW (14,486 x 1.15 to allow for reserve margin). The new facilities which have already been planned to meet this demand are as follows:

Base - 1980	Roxboro 4	(720)
1982	Mayo 1	(720)
1983	Harris 1	(900)
1984	Mayo 2	(720)
1986	Harris 2	(900)
1987	(undesigned)	(1150)
1988	Harris 4	(900)
1989	(undesigned)	(1150)
1991	Harris 4	(900)
*1992	(undesigned)	(1150)
Peaking - 1981	(peaking)	(212)
1985	(peaking)	(300)
1991	(peaking)	(250)

2007 Demand: Projections for the year 2007 are difficult to make as they are only projections based on assumptions extending far into the future. However, even assuming a 4.4 percent conservation scenario, a 2007 demand can be projected as follows:

<u>Yr.</u>	<u>Demand</u>	<u>With 15% Needed Cap.</u>
1992	14,486	16,659
2000	20,425	23,488
2007	27,523	31,651

These plants are the plants which shall be planned during the next 15 years. The planning period is the most critical period for alternate site considerations and for philosophy and design that will foster efficiency, conservation and environmental goals. Currently the planning

period for a nuclear unit is 13 years from date of application until it comes on line. The Public Staff predicts that the shorter time period for coal fired units may have disappeared as a result of EPA amendments to the Clean Air Act.

Presuming that future plants would have a 2000 MW size, then CP&L will plan at least six facilities for North and South Carolina during the next 15 years. There is a strong possibility that one plant could be located in the coastal zone of North Carolina. Obviously, should the utility pursue a small scale plant strategy, a larger number of plants of smaller capacities will be constructed.

### 1. Transmission Routes

The planning period for substations and transmission lines are the same 10-year planning as provided for the units and plants. CP&L and VEPCO have detailed their plans for restoring lines, etc. The major concern in routing is not so much in environmental or social impact of the line itself, but rather, it is in commitments made to later siting of the plants themselves. CP&L's plans through 1986 call for construction of a 500 KV line from Rockingham to Fayetteville to Erwin to Lee to Kinston to New Bern. Future links may very well emphasize completing the loop by connecting that line with Wilmington and returning back to Fayetteville. Future sites for plants will probably come from the Pamlico, Neuse and Cape Fear River Valleys.

### 2. Oil Terminals

North Carolina produces none of its petroleum requirements; however, from 1960-1972 the demand for petroleum products increased 77%. This demand has decreased somewhat as a result of higher prices for oil and conservation efforts, yet the dependency of the State on petroleum is evidenced by the fact that these products constituted approximately 53% of North Carolina's total energy needs. Broken down by category, reliance on petroleum products is as follows:

- Transportation - 66%
- Industrial - 11%
- Residential - 10%
- Commercial - 6%
- Electric generating - 6%

On a Statewide basis petroleum products are brought in by pipeline, tanker, barge, rail or truck. Selection of method depends heavily upon the point of origin. For example, most of the "light oils" are brought into the State by three major pipelines from the Gulf Coast Region. Figure 1 depicts the major routes of these pipelines, and as can be seen, none are now located in or anticipated for the coastal zone. From the pipeline source, petroleum is transferred via rail or truck to coastal distributors.

In contrast to light oils transport, all residual fuel ("heavy oil") is brought into the State by ocean-going tankers since its source of origin is from foreign supplies. Facilities associated in conjunction with North Carolina's two ports at Wilmington and Morehead are the destination points of these supplies. Therefore, a significant portion of the existing oil terminal and major storage facilities in the coastal zone are associated with or in close proximity to these port areas. Below are the distribution of product volumes entering North Carolina through the ports:

Wilmington & Morehead City (1973)

<u>Product</u>	<u>Foreign (gallons)</u>	<u>Domestic (gallons)</u>
crude oil	189,550,297	
jet fuel	-	52,069,891
kerosene	8,931,879	41,885,285
middle distillates	25,463,352	165,933,625
residual fuel	498,853,497	35,327,362
lube oil	-	4,003,733
naphtha & petroleum	-	35,727,582

The State has met the demand for petroleum by importing through marine terminals and pipelines. Capacity to meet demand appears adequate despite increased tanker loads during the past five years. Since natural gas supplies were curtailed up to 65% in 1976, many natural gas users have been forced to switch to petroleum products, primarily residual fuels and propane. If the curtailment situation does not significantly improve, the increased demand could cause a strain on port capabilities. Similarly, if domestic flows are decreased, the loss in pipeline imports may be met by tanker imports which could also strain terminal facilities.

The existing port facilities possess the necessary requirements for oil terminal siting (protected harbor, waterfront land on a deep draft channel, access to oil storage facilities and a distribution network). However, tanker size is limited by present channel depths. Through dredging or deepwater port construction larger tankers could be accommodated.

### 3. Oil Tank Farms

Since North Carolina depends upon oil for 53% of its energy needs, and because it has no indigenous supply of oil, oil storage is crucial to maintaining a stable supply. Presently North Carolina has approximately 670 million gallons total primary storage capacity at nine locations throughout the State. Of this total, storage capacity in the coastal zone is estimated at 334.3 million gallons (approx. 50%). Whereas non-coastal storage facilities are located adjacent to pipeline routes terminating in or passing through the Piedmont region of the State, all primary storage facilities in the coastal area are concentrated in the

port areas of Wilmington and Morehead City and associated with the oil terminals there. By far, the majority of coastal storage is situated in the Wilmington area along the Cape Fear River. (Figure 2 lists the primary storage terminals controlled by the prime suppliers found in the State.)

Existing storage capacities appear adequate at present to store required volumes, and capacities have to date been capable of handling demands. However, no official figures on reserve storage capacity are available, therefore, the State lacks adequate assurances that present capabilities are sufficient.

In attempting to assess whether additional facilities may be required in the coastal zone several factors should be considered. First, as stated above, storage capacity could be inadequate already. Thus, additions may be needed at one or several locations. Second, tentative plans to locate a liquid propane gas (LPG) receiving terminal and storage facility in the Radio Island (Morehead-City) area call for storage facilities of approximately 31 million gallons. If development occurs, additional storage capacity will be built.

Finally should recruitment efforts be successful or regional demands necessitate locating a large refinery in North Carolina's coastal zone, tank farm facilities associated with a larger scale refinery could eventually consist of a number of large volume tanks with a storage capacity of up to one million barrels each.

#### 4. Petroleum Refineries

Although approximately 53% of North Carolina's energy requirements are met by petroleum products, the State presently lacks any refinery capacity. This lack of capacity is part of a trend for the entire South Atlantic area. In the entire four-State area production of petroleum and petrochemical products is negligible.

The major reason for the lack of refinery capacity is that refineries have tended to be located near the supply, namely in the Mid-Atlantic or Gulf regions. The need for products in the South Atlantic area has been met by transporting oil via pipelines.

Future location of a refinery in North Carolina remains highly speculative. Although increased offshore oil and gas development in the South Atlantic will not demand construction of a refinery facility in the N.C. coastal zone, increased consumption of petroleum products in the southeastern region could serve as an impetus to locating a refinery independent of OCS activity. Consumption for the four-State area is estimated at 428 million barrels per year or 1,173,000 barrels per calendar day of refinery throughput. This demand in the South Atlantic region can be translated to 5 refineries of 250,000 barrels each growing to 11 by the year 2000.

Because of the above facts, North Carolina has actively sought to recruit a refinery into the State. A refinery would be expected to increase local and State revenues, increase job opportunities and increase secondary economic benefits. The State prefers a coastal site for the refinery because the coastal area has not shared the economic growth enjoyed by the Piedmont section and because the area has more available land and water that meet industrial requirements.

The refinery most commonly proposed for North Carolina is a fuels refinery of approximately 200,000 bpd capacity. The siting parameters and impacts of such a facility have been the subject of a North Carolina study. Basically, a 200-250,000 pbd refinery requires 1,000-1,500 acres of land for processing, tank farm storage, and a "green belt" buffer zone. Vacant tracts of this size with suitable topography and load bearing characteristics limit the alternatives; however, at least three potential sites in the North Carolina coastal zone have been identified.

## 5. Deep Water Port

The likelihood of attracting an oil refinery to the coastal zone of North Carolina is intimately tied to development of a deepwater port in the offshore waters of the same general vicinity. The two are inter-dependent since one of the major requirements in refinery siting involves the ability to assure a stable and continual supply of crude oil. Since neither the port at Wilmington or Morehead is capable of handling tankers with a draft greater than 32 feet MLW without extensive dredging, development of a deepwater port capable of handling very large tankers (100,000-500,000 DWT) is essential.

Studies conducted on the feasibility for accommodating deepwater port development for the four-State southeast region concluded that several sites are available that would fulfill the needed siting parameters. Of these sites, one was located in the southern part of North Carolina 41 miles offshore in approximately 110 feet of water. Whether or not a deep water port actually becomes a reality for North Carolina is highly speculative. At present there are no proposals pending to develop such a port; however, on a regional basis there has been a demonstrated need for a deepwater terminal, in the Gulf or Atlantic Coast Regions. For this reason, as well as the fact that the southeast demand for petroleum products is on the rise, the North Carolina Coastal Zone could be called upon to provide sites for a deepwater port in the future.

The facility proposed for use in the Coastal Plains Region would be the single point mooring (SPM) system. This system consists of a buoy securely anchored to the ocean floor, incorporating a swivel arrangement which allows the buoy complete freedom to rotate in a full circle. A specially designed hose would extend to the surface from a rigid submarine pipeline on the ocean floor, which is coupled to piping manifold connections onboard the moored tanker. This pipeline would connect the pumping station to an onshore facility which would include a storage tank farm.

As stated previously, channel depths in North Carolina ports presently limit tanker size; however, development of an offshore system such as the one described above would allow VLCC's to unload cruder oil without necessitating extensive dredging or increasingly harbor congestion in port areas. Although deepwater ports may provide significant savings in petroleum transportation costs and reduce congestion in port areas, they pose more adverse environmental impacts than do pipelines.

#### 6. Liquid Propane Gas (LPG) Receiving Terminal and Storage Facilities

All natural gas consumed in the State of North Carolina is brought into the State by one interstate gas pipeline supplied by TRANSCO. Figure 3 shows the route of this pipeline and ancillary lines. Although smaller lines service the coastal zone of North Carolina, the main supply line is routed through the Piedmont region of the State.

Since 1971, the volumes of natural gas imported into the State have steadily decreased due to increased curtailments. During 1975, approximately 110 MMCF were sold to North Carolina compared to 124 MMCF in 1976. Since that time curtailments have escalated further, causing the State to experience a 60-65% cutback during the 1977 winter season.

For many industrial users, the cutbacks have had a significant impact. Since North Carolina Utilities rule R6-19.2 gives top priority to small commercial and residential users, most industrial users have been forced to switch to alternate fuels. Reported capabilities in switching to coal or electricity as an alternate source are nonexistent. This means that petroleum products made of synthetic substitutes, such as propane, residual or distillate fuels, will be substituted for natural gas.

For the North Carolina coastal area, natural gas curtailments could pose potentially serious problems. Natural gas is used as the energy supply in numerous coastal industry operations; therefore, cutbacks could affect the area's economic picture.

However, alternate fuel supply also presents problems. Individual users of propane who are located in the coastal area are small consumers. The sole supplier of propane, Dixie Pipeline, delivers one million gallons per day to the Piedmont region of the State. In addition, a storage capacity of 17 million gallons is used to supply peak demand. Additional requirements must be brought into the State by rail tankers or transport trucks. Such supply methods are not feasible for the small user.

With the coastal region requiring increased amounts of alternate fuels such as propane, the State has attempted to recruit additional facilities into the coastal area. Tentative plans call for an LPG receiving terminal and storage facility to be built on Radio Island (near Morehead City). This facility will consist of offloading facilities with a storage tank in excess of 21,000,000 gallons. From the Radio Island storage

facility the propane will be pumped out of storage to another storage facility to be built on the mainland for shipment out by rail. Total acreage would be 76 acres for the Radio Island site and 50 acres for the mainland site.

## 7. Outer Continental Shelf (OCS) Exploration and Development

Since the Atlantic has been opened to OCS exploration and development, coastal States along the East Coast can face impacts from such offshore development and associated onshore facilities.

The impacts to North Carolina from such leasing activities are highly speculative. To date, two lease sales have taken place which have the potential to affect the State; however, the Mid-Atlantic (#40) and the South Atlantic sale (#43) have excluded any lands directly offshore the North Carolina Coast. Neither of the Department of the Interior Environmental Impact Statements indicates any foreseeable impacts to the North Carolina Coast Region, but several factors serve to cloud the picture.

First, a large find in either region might serve as an impetus to locate facilities, if the source was a reasonable distance from the North Carolina shore. Second, air and/or water quality standards, especially in the mid-Atlantic region, could make the siting of certain facilities prohibitive, thus increasing the desirability of less-developed areas such as North Carolina. Third, although the petroleum potential in the South Atlantic is most favorable in the Blake Plateau - S.E. Georgia Embayment area, the Hatteras Embayment and flanks of the Cape Fear Arch could yield significant oil finds as well. If future exploration and development were to take place in the latter areas, the potential for onshore impacts would rise significantly.

Thus the future impacts of OCS development on the North Carolina energy supply and resources are uncertain. At the present time, the State has no experience or expertise in dealing with OCS-related development. For the most part, the region is composed of rural areas interspersed with centers for tourism, recreation and port activities. The corresponding economic condition is below State average. OCS-related activity could produce numerous jobs and provide an economic stimulus to the region. With proper planning many environmental and social impacts may be avoided or diminished.

## 8. Peat Mining

Vast acres of the North Carolina coastal zone are devoted to farming endeavors. Recently, however, it was discovered that portions of these farmlands contained potentially valuable peat deposits. In an effort to help supply energy needs and reclaim valuable lands for farming, a corporate farming company has embarked upon an experimental mining (or harvesting) program. If peat mining proves successful, North Carolina could supply some of its own energy requirements.

A majority of the deposits are found in the north central portion of North Carolina's coastal zone. (See Figure 4.) According to preliminary estimates, there are approximately 407,000,000 tons of harvestable peat on about 146,000 acres of land. This is enough peat to fuel a 400 megawatt electric generating plant for over 150 years, or an 80,000,000 cubic foot per day gassification plant for over 48 years. Translated to barrels of oil, the reserves are roughly equivalent to 700 million barrels.

The extraction, production and subsequent burning of peat to generate electricity causes less harm to the environment than a process to produce a like amount of electricity from coal. Peat deposits, which lie on the surface and seldom extend to a depth below 6 feet, are removable without strip mining. Although peat mining has associated impacts on the water table and water quality, these impacts are not substantially different from those caused by coal extraction. The burning of peat to generate electricity is preferable to coal in that peat is lower in sulfur and ash content. Furthermore, unlike land where coal has been extracted, peat lands are suitable for agricultural or silvacultural uses without extensive investments for reclamation.

The success of peat mining is reliant on cost effectiveness and the technological ability. If harvesting operations prove successful, North Carolina Electric Membership Corporation is interested in building a peat-fueled power plant in the coastal area.

The following facilities are not expected to locate within or significantly affect the North Carolina coastal zone:

1. Gassification plants
2. Power plants involving direct solar energy
3. Power plants involving ocean thermal energy conversion, tidal or wave power, wind power or geothermal
4. Facilities used for the transportation, conversion, treatment, transfer or storage of LNG
5. Uranium enrichment or nuclear fuel processing facilities
6. Facilities to separate oil, water and gas
7. Drilling rigs, platforms and exploration rigs, pipe loading yards, bases supporting platforms and pipeline installation and crew and supply bases
8. Oil and gas storage in salt domes
9. Marine pipelines systems, including pressure source, gathering lines, pipelines, intermediate pressure boosting facilities and landfall sites
10. Facilities for geopressurized gas

## REFERENCES

- North Carolina Energy Policy Council, Annual Report, Vol. II, January 1, 1977.
- American Society of Planning Officials, Onshore Impacts of Outer Continental Shelf Oil and Gas Development, Vols. I, II, & III, July 1977.
- Goodman, Joel; and Peter Klose, Environmental Planning for Offshore Oil and Gas, Vol. V (Part 2), "Regional Status Reports, Mid and South Atlantic," Prepared for the Conservation Foundation, March 1978.
- U.S. Department of the Interior, Final Environmental Impact Statement, Lease Sale 43, Prepared by the Bureau of Land Management, 1978.
- Coastal Plains Regional Commission, The CPRC Deepwater Terminal Study, Vols. I and II, Prepared by Robert Nathan and Assoc. and Coastal Zone Resources Corporation, January 1975.
- N.C. Department of Commerce, Energy Consumption in North Carolina - 1975-76, Prepared by the Energy Division, April 1977.
- N.C. Departments of Commerce and Natural Resources and Economic Resources, North Carolina. Report on Natural Gas, Prepared by the Inter-Agency Task Force, November 1976.
- N.C. Department of Military and Veterans Affairs, North Carolina Petroleum Distribution, Prepared by the Energy Division, March 1975.
- N.C. Department of Natural and Economic Resources, North Carolina Water Framework Study; The N.C. Water Plan, March 1977.
- N.C. Department of Natural and Economic Resources, The North Carolina Petrocomplex Study, Prepared by the Office of Marine Affairs, March 1977.
- U.S. Department of the Interior, Draft Environmental Impact Statement on the Proposed 1979 Oil and Gas Lease Sale Offshore The Mid-Atlantic States (Lease Sale 49), Prepared by the Bureau of Land Management, April 1978.
- Southeastern Electricity Reliability Council, Annual Report: Virginia-Carolina Subregion, 1977

## Section 2: Impacts and Management Controls

Because of the lack of energy facilities in the past within the State, North Carolina has not developed comprehensive siting legislation specific to siting energy facilities. However, the State has the ability to address the overwhelming majority of significant impacts arising from the construction and operation of an energy facility. For the most part management controls reside in the web of regulatory controls exercised by State departments and independent commissions.

Therefore the present process is characterized as one evolving from the numerous regulatory programs already in existence and informal working arrangements developed by the major actors involved. For this reason the process of siting energy facilities (exclusive of those that are part of OCS oil and gas development) is basically the same as that used for siting any major industrial facility. The exception to this statement is with regard to electric generating and transmission facilities, which, because of more specific legislation, add extra steps to the basic process. Generally the major functions are divided between the State Department of Natural Resources and Community Development (the CM agency) and the Department of Commerce. The meshing of these functions provides North Carolina with a process relative to planning for and managing the impacts of energy facilities.

This section defines the State's present process in terms of its component parts; (forecasting, preliminary site analysis, environmental review, and the permit process). The remainder of the section will describe these steps and identify legal authorities and management techniques for each.

### A. Forecasting Phase:

The anticipation of major facilities locating in the State is largely a matter of accurate forecasting. To be effective, forecasting should yield outputs predicting the need for a facility prior to a time when that facility's location has been planned. Forecasting is currently being done at a sophisticated level for electric generating and transmission facilities by the North Carolina Utilities Commission pursuant to authority granted under the State Public Utilities Act. (R8-43) promulgated by the Commission which requires every electrical public utility to submit annually a report containing a ten-year forecast of loads and generating capability. The report will describe all generating facilities and transmission facilities with operating voltage of 200 KV or more which will be required to supply system demands during the forecast period. Although this report is designated as a 10-year report, through cooperation with the major utilities a 15-year report is currently being filed with the Utility Public Staff. In addition, a biennial report must be filed which must include a 20-year forecast of load, generating capability and reserve margins. This information is used by the Utilities Commission in ascertaining the need to construct a new facility.

Neither the act nor the rules require public hearings regarding forecasting. The Utilities Commission, however, has in the past subjected the utility's forecasts to public scrutiny. This public input in conjunction with independent staff projections provides a forum for public involvement early in the process.

Unlike the Utility Commission's regulations for electric generating facilities, no formal forecasts of future demand are required for other energy facilities locating in the State. However, pursuant to the directive contained in the State's Energy Policy Act the Energy Division within the Department of Commerce has begun preparations to provide an independent analysis in 5-10-20 year forecasts of future energy production, supplies and consumption for energy facilities other than power plants (G.S. 113B 8(3)). This will entail development of a data collection, storage and forecasting system that will allow the projection of energy and demand by fuel source and end-use.

Initially, the system will consist of an energy data bank for North Carolina to include the major variables of energy consumption, by fuel and consuming sector in the State. This is the first step in forecasting. In addition, it will also provide the State with reliable, consistent and readily accessible information and will provide a central repository for such information to be available to all State agencies, including the CM agency, for planning purposes. Decisions to permit energy facilities are not dependent on the facilities having been identified through forecasting. Forecasts will be used in State industrial recruitment efforts.

Authorities:           Public Utilities Act (G.S. 62-1 et al)  
                          Energy Policy Act (G.S. 113B-1 et al)

#### B. Preliminary Site Analysis Phase

After a utility or industry identifies that a new site to meet future demands needs to be set aside and has tentatively decided to locate in a general region of the State, the Industrial Development Division within the Department of Commerce helps "guide" an applicant to specific sites within a generalized region. Through an informal agreement between NRCD and Commerce, both departments will work together with the applicant to assist him in finding broad siting areas where industrial development is needed and environmental standards not exceeded. To aid in this effort the Department of Natural Resources and Community Development has produced a document which attempts to address the government's position of reconciling site demands imposed by industry and environmental constraints. This document, entitled the "N.C. Water Resources Framework Study," is available to industry and the public; it maps areas where major facilities are encouraged to locate. In this way positive guidance in locating acceptable sites is given.

Although this stage of the process is an informal one and is characterized by informal working arrangements between the two departments, it is a vital stage in allowing the State to provide a spectrum of inputs in narrowing down sites. Basically, once a decision to locate is known by the Department of Commerce, all affected State agencies will meet with the potential applicant. At that time plans to deal with expected impacts, consideration of alternate sites, and costs/benefits of the project would be discussed. The Department of Commerce requires that the industry not have committed itself to a site prior to this meeting.

At this time, affected agency representatives will have a chance to identify specific concerns regarding the project. If the project contemplates a coastal location the CM agency would be one of the affected agencies within DNRCD contacted to attend this preliminary site review meeting. At such time, the CM agency would present its coastal policies against which subsequent permit applications and consistency determinations will be made.

At this stage only affected agency input is sought. The CM agency, through an agreement with the Department of Commerce will be included early in the site selection process when coastal sites are part of those sites being considered. In this way coastal objectives in energy siting can be met early in the process, even before formal permit applications have been initiated.

This agreement for early consultation will be formalized as part of a list of projects to be monitored for consistency (according to the provisions of Executive Order #15) with the CZM program between DNRCD and the Department of Commerce.

To aid the Department of Commerce in guiding applicants to suitable sites the CM agency will encourage local governments to define broad areas where industrial development (such as energy facilities) can best be accommodated. This local planning effort will be done under criteria developed by the CRC and will be subject to the CRC for approval.

#### Implementation:

N.C. State Consistency Provisions (Executive Order #15)

#### C. Environmental Review Phase

Environmental review of energy facilities is accomplished through the use of several mechanisms and is an important factor the State relies on in determining which site is chosen for a particular facility's location.

#### Power Plants:

For power plants and transmission lines Utility Commission Rule 8-42 requires that 120 days prior to filing an application for certification with the Commission, the utility must file a preapplication

report for any facility 300 MW or larger. The R8-42 report is an environmental assessment and requires an extensive consideration of the advantages and disadvantages of the "chosen site" and alternative sites considered by the applicant. To allow for meaningful public input into alternative siting, the regulations provide that the applicant not have entered into a substantial irreversible commitment for the purchase of major components of the generating system. Reflecting a concern for the quality of site review, R8-42 requires the following:

- (1) Available site information, including alternative sites evaluated;
- (2) Information concerning geological, aesthetical, ecological, seismic, hydrological, demographical feature of the site area;
- (3) Information on loads and resources as they relate to need;
- (4) Description of status of investigations on site;
- (5) Statement of proposed plans by other near the site;
- (6) Statement of plans for meeting air and water quality standards;
- (7) Description of transmission line routes;
- (8) List of all agencies having regulatory authority over the project;
- (9) Cost information on all expense categories at site, plus information on fuel costs, plant service life, capacity factor, transmission costs;
- (10) Construction schedule.

If the Utilities Commission or Public Staff finds that there is a substantial issue surrounding the project, the R8-42 document will be sent to the appropriate agency for analysis prior to certification hearings. When ability to conform to coastal policy or standards is an issue the document will be reviewed by the CM agency.

For nuclear power plants locating in the North Carolina coastal zone, environmental review and site considerations will be handled through the Nuclear Regulatory Commission's EIS requirement. Those plants proposing to locate in the coastal zone will be reviewed by the CM agency for conformance to coastal policies and a consistency determination issued upon fulfillment of relevant policies.

### Other Facilities:

The majority of energy proposals for construction within the coastal zone will involve an environmental impact statement following the criteria and procedures set forth in the National Environmental Policy Act of 1969 (NEPA). NEPA attempts to have environmental effects fully considered before initiating a project. Among the actions requiring an EIS are offshore oil development and ancillary facilities, projects requiring dredge and fill operations and construction of nuclear power facilities (see discussion above). The EIS is required to address alternate sites, short and long-term adverse impacts and irreversible commitments of resources. The procedure involves a complete review by a panoply of government agencies, Federal, State, and regional. It also entails public hearings and an opportunity to enter formal objections to the project. The CM agency will utilize this EIS procedure for monitoring and analyzing significant projects requiring Federal permits. The State anticipates that most oil and gas facilities locating in the coastal area will involve port facilities or pipelines in coastal waters. Both of these alternatives will require that an EIS be filed.

For those energy facilities not meeting Federal EIS requirements the State can require an EIA under provisions granted under G.S. 143B-437. This assessment is required for new or expanding industry and will discuss the project in terms of alternate site considerations. Coastal proposals will be monitored by the CM agency and those projects which are determined through consultation by Commerce and the CM agency to be of a significant nature (size, impacts, etc.) will be subjected to the EIA provisions of 143B-437. Administrative procedures will be worked out during program implementation.

Finally, if proposed oil refinery regulations are adopted, oil refineries which locate within the State will require that an environmental assessment be done as part of the formal application process. This assessment will include an analysis of alternate sites considering such factors as impacts on land, air, and water resources; cumulative effects and social and economic effects. Provisions for public input will also be provided.

In summary, the environmental review procedure is relied upon by the State to fully discuss the impacts of project construction and location. It is the phase where all affected agencies - State, Federal and private - have an opportunity to become involved. The CM agency will rely upon this phase to help guide siting decisions and will monitor and review EIS-EIA documents. Procedures for working out coordination actions will be developed as part of both Federal and State consistency provisions.

### Implementation:

- National Environmental Policy Act (P.L. 91-190)
- Investigation of Impact of New and Expanded Industry (G.S. 143B-437)
- Oil Pollution Control Act; specifically, Oil Refinery Permit (G.S. 143-215.100)
- Public Utilities Act (G.S. 62-1) Rule 8-42

### D. Permit Phase

Although North Carolina has no statutory authority to direct energy facilities to a specific site, the prevention of the siting of facilities in areas which can not accommodate them is accomplished through the permit process. Since the State has developed numerous laws in response to the impacts a project can perpetrate, fulfillment of the various relevant permit requirements basically determines final site selection.

For most large scale projects (including energy-related projects) the State requires several environmental and health permits before beginning construction. For electric generating and transmission facilities; however, an additional permit related to the actual need for the facility is required. The following discussion will present the impacts associated with large energy developments and the various authorities developed by the State to control such impacts.

### Certificate of Public Convenience and Necessity; Electric generating facilities only; (GS 62-110.1)

Construction of large electric generating facilities serve an important function in supplying energy needs to North Carolina. However, plant construction also commits users to the costs associated with building and operating such a facility. Pursuant to NCGS 62-110.1, any person who desires to build a stream generating facility must obtain a certificate of public convenience and necessity prior to beginning construction. In determining what constitutes "convenience and necessity" the Utilities Commission is directed by the standard that the utility must show that the facility is more than convenient although it need not be necessary in the sense of being indispensable. The determination of "convenience and necessity" should reflect unmet needs in peak demands as determined by the Utilities Commission in forecasting.

The Utilities Commission makes its decision on certification following public notice and hearings. State agencies, including the CM, are allowed to participate as adversaries or parties before the Commission.

### Environmental Permits; applicable to all facilities

Water Quality Concerns: Energy facilities affect water quality through their intake systems which withdraw and consume water and through the discharge of effluents, (petroleum, chemical effluents, metals, and ash) and thermal pollution. The management of environmental impacts on water quality is essentially through end-of-pipe controls placed on the discharger by the Environmental Management Commission administering the State Water Quality Statutes. All facilities are required to meet ambient water quality parameters; electric generating facilities and oil refineries must meet performance standards promulgated by EPA. In order to determine whether the operation will adversely affect water quality, the EMC (acting pursuant to G.S. 143-214.1) has classified the waters of the State into classes based upon standards concerning temperature, dissolved oxygen, solids, etc. A facility desiring to discharge to State waters will project the type and amount of effluent. Through the use of computer modeling, DNRCD can project probable impact on stream quality. If the discharge will result in any stream standard being exceeded, the permit will be denied.

Facilities which propose to discharge into the groundwaters of the State must receive a permit from the EMC pursuant to authority granted in (G.S. 143-215.3). If the discharge would violate the established water quality standard for groundwaters a permit can be denied.

The accidental release of petroleum to surface or groundwater from tank farms, terminals and storage facilities is governed by the Oil Pollution Control Act (G.S. 143-215.83). A permit must be obtained from the EMC and conform to the conditions set forth for issuance of NPDES permits. As in NPDES application, a permit to discharge oil can be denied if it would contravene either established effluent standards/limitations or water quality standards. Public hearing and notice is provided. Because of the controversy surrounding major facilities, DNRCD expects that most permit decisions will require hearings (G.S. 143-215.1 and 143-215.2).

Prior to obtaining an NPDES permit, the State will need to certify to the Environmental Protection Agency that a major facility will not violate water quality. This certification, entitled 401 Water Quality Certification, must be made within 20 days of an application by the facility. As in the above, public notice and hearing on a project is given. In addition a public hearing for the purpose of receiving public comment. (G.S. 143-215.3).

Some major facilities, notably electric generating facilities and oil refineries, may pose significant impacts on water quality and stream uses through the withdrawal and/or consumption of substantial amounts of water. For example, a 2000 MW power plant may withdraw in excess of 100 cfs. Consumption for a facility is largely a measure of the type of

technology used for cooling. Units of withdrawal may be established indirectly through ambient water quality standards which address effluent load in light of decreased stream flow. However, the State also has the ability to designate critical water use areas through the EMC acting pursuant to GS 143-215.13. If a facility proposes a water use in an area that could detrimentally affect the aggregate uses of the ground or surface waters in that area so that renewal of replenishment of waters is impaired a capacity use area can be designated. When done, a facility must conform to water withdrawal limitations set by the EMC and is required to obtain a water use permit. Public notice and hearing provisions are required according to GS 143-215.15.

**Air Quality Concerns:** Large industrial facilities such as energy facilities can be major contributors to air pollution through their emission of particulates, sulfur dioxide, nitrous oxides, carbon monoxide, hydrocarbons, water vapors, and acid mists. Although each facility will not contribute all such emissions, different facilities can contribute a portion of these depending on the product being process. Impacts from emissions can be environmentally damaging, health hazards and aesthetically displeasing. Control of such impacts is primarily through end-of-pipe regulations placed on the discharger by the EMC pursuant to GS 143-214.108. The air quality system parallels the water quality system in that the regulation speaks to ambient air quality and performance standards; however, there are numerous differences. Ambient quality standards are based on quality for certain regions of the State. Accordingly all regions are classified as class one, two or three regions, representing degrees of ambient air quality. Currently there are no nonattainment areas in the State (areas that cannot meet Federal/State air quality standards). There is however one area of the coastal region that is designated as a nondegradation area, namely Swan Quarter. An applicant for a permit to emit pollutants in the State will have to satisfy the State that he will not cause ambient quality standards (most for Class 2 regions) to be exceeded. Current ambient quality address concentrations of particulates, sulfur dioxide, nitrous oxide, hydrocarbons, carbon dioxide, as well as a number of hazardous pollutants. The decision concerning exceeding ambient quality must be made through monitoring similar to that use in water quality.

Recently EPA has promulgated regulations to address preventing significant deterioration (PSD). PSD standards are incremental ambient standards. They require that the applicant not only cause ambient concentration not to be exceeded but also that the applicant not cause the incrementally allowable amount of deterioration to be exceeded. In order to achieve PSD standards the State will need to have data which adequately measures ambient air quality for at least one year prior to a decision on the permit. Hence PSD will require a lengthening of the time necessary to process a permit. Air quality permits will require a public hearing and are subject to the possibility of a contested administrative hearing, thereby giving the public an opportunity for input.

### Other Environmental Concerns:

Sedimentation control - Sedimentation associated with construction of major facilities has the ability to pollute coastal waters from uncontrolled run-off. Although not a water quality problem in the sense of introducing an effluent into the water sediments can impact coastal waters by increasing turbidity and reducing available light, kill plants and animals and destroy important larval species as well. To control such impacts the State requires that land disturbing activities be conducted according to an approved sedimentation control plan according to GS 113A-50. These plans must be approved by DNRCD and minimum requirements call for providing sufficient buffer zones along natural water courses and revegetation stipulations.

Mining activities - Peat mining is presently being undertaken on an experimental basis for use as an alternate energy source. Mining operations, however, can cause impacts to water quality and wildlife or fisheries resources. To control these impacts a mining permit (GS ~~74-51~~) must be issued by DNRCD before engaging in any land disturbing activity defined as mining. Standards for denial are based on adverse impacts to wildlife or fisheries resources, violation of air or water quality standards, and physical hazards to adjacent property.

Dredge and fill activities - Most coastally dependent energy facilities, such as terminal facilities and associated storage facilities, ports, etc., will by their nature, engage in dredging and filling activities. Noncoastally dependent facilities may require dredging to place pipelines between the site and the water. Dredging and/or filling operations associated with location of such facilities can significantly impact the coastal environment including, impacts to water quality; destruction of productive marsh, estuarine fish and larval species; reduction in nursery and spawning areas, etc. To control these impacts the State, acting pursuant to GS 113-220, required a permit from DNRCD before engaging in any dredge or fill work in State coastal waters. Permits can be denied if there is significant adverse effect on: 1. riparian owners; 2. public health, safety or welfare; 3. use of the water by the public; 4. conservation of water supplies; and 5. wildlife or fresh or marine fisheries. Public notice and hearing provisions are required.

### Coastal Area Management Act Permit:

Major energy facilities may pose significant adverse and beneficial impacts on the use of land for residential or industrial uses, on the ability of the local government to meet demands from its residents for services, on the ability of local government to act with the sound fiscal policy, on the quality of the estuarine life. Most land use and planning regulations exist at the local level, however, the Coastal Area Management Act has provided additional standards and assistance to alleviate these problems at the State level. The State has attempted to address the

problems of services provided by local government (counties and cities) by requiring planning of all localities prior to being certified for CAMA regulatory purposes. Included in the CAMA guidelines for planning was a requirement that the locality budget capital improvements and define, through land classification, areas within its jurisdiction where it intends to provide services within the next ten years (called transition areas). The plans in order to be adopted were required to go through public hearings and participation; adoption was through the local governing body; enforcement is through the local permit officer acting pursuant to an approved implementation and enforcement plan.

In addition to the planning element, the State is required to apply State policies as adopted by policy making commissions subject to the executive order (#15) and policies set out in the statutes by the legislature. Additional policies addressing impacts on local government, recreation and scenic resources from energy and other major facilities are currently pending before the Coastal Resources Commission.

The CAMA also has the ability to address impacts in areas of environmental concern. Pursuant to NCGS 113A-113 the CRC is called on and did designate many areas of environmental concern in the coastal zone. Prior to an energy facility undertaking a development, even partially, in an AEC, it will need to obtain a CAMA permit.\* CAMA permits are required to be issued upon application unless the development violates one of the standards spelled out in NCGS 113A-120. Among other standards the development must not be inconsistent with the State guidelines or the local land use plans. The State guidelines specify management objectives and use standards to be applied to projects to determine if they are consistent with approvable development in AEC's (see 15NCAC7H). For example, development projects in the estuarine shoreline AEC demand that the development show a sound understanding of the dynamics of this fragile natural area. Similar flexible standards are set out in other AEC's. The local land use plans contain few statements which have the potential of being applied for consistency tests. Typically one should look to the goals and objectives set out in the plan and synopsis for guidance. Some of the plans may contain development standards governing industrial development. We are not aware of any plan indicating a desire not to accommodate energy facilities that are in the national interest.

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\* Electric generating facilities are subject to the provisions of CAMA at the present time in that the Utilities Commission currently does not indicate a desire to apply the standards and guidelines on AEC's. In the event that the Commission should indicate an intent to apply standards and hence regulate the development proposals in AEC's, the CRC will abdicate the role of reviewing permits in this area. All development proposals for electric generating facilities are by statutory mandate major development permits.

The Utilities Commission has adopted an informal policy of referring decisions concerning expertise in environmental matters to the EMC and NDRCD.

All contested CAMA major permit applications are subject to a full administrative hearing before the Coastal Resources Commission.

Oil Refinery Permit - GS 143-215.100 stipulates that no facility which is to be used or is capable of being used for the purpose of refining oil shall be constructed until a permit authorizing such construction has been issued by DNRCS. Because of the various impacts a refinery could impose (see air and water sections, above) this permit is one which will be issued after other relevant permits (air, water, CAMA, etc.) have been obtained.

Standards for permit denial include adverse impacts on wildlife and fisheries resources, violation of air or water quality standards, and adverse impacts on a publicly owned park, forest or recreational area. Provisions for permit applications, processing, etc., are presently being drawn up. It is anticipated that public notice and hearing provisions will be included for public input purposes.

In addition to the above permits and regulations which affect energy facilities, some projects may require additional permits because of peculiarities inherent in the design of the facility or availability of local facilities. A listing of other management controls is set forth in Chapter 5 of the CZM plan. Finally, to the extent that a major facility may impact land use and local government services, such impacts may be addressed through local zoning, subdivision regulations or other ordinances. Presently very few areas in coastal North Carolina are zoned, and it is not anticipated that energy facilities wishing to locate would be unreasonably excluded.

Currently, State permit applications are reviewed by the CM agency for consistency with the coastal program. In the future both Federal and State permits listed in the CZM plan will be reviewed for compliance with coastal policies. If an energy facility is found not to be in compliance, permit issuance could be denied. Executive Order #15 requires the relevant State permitting agencies to be cognizant of their permit decisions in relation to coastal objectives. Federal agencies must also be consistent under the provisions of Section 307 of the FCZMA.

#### Implementation:

- Water Quality Control Statutes (G.S. 143-215.1)
- Air Quality Statutes (G.S. 143-215.105)
- Oil Pollution Control Act (G.S. 143-215.83)
- Sedimentation Pollution Control Act (G.S. 113A-50)
- Mining Act (G.S. 74-51)
- Dredge and Fill Law (G.S. 113-229)

Coastal Area Management Act (G.S. 113A-100)  
Oil Refinery Law (G.S. 143-215.100)  
Public Utilities Act (G.S.62-110.1)  
State Consistency Provisions (Executive Order 15)  
Federal Consistency Provisions (Section 307-FCZMA)

## Section 3: Coastal Management Policies

### Policies Relative to Energy Facilities

Section 923.14(a)(3) of the Federal regulations requires the State to articulate policies for managing energy facilities and their impacts, including an articulation of conditions that may be imposed on site location and facility development. To fulfill this requirement the coastal management agency has compiled a listing of existing policies that guide energy facility siting decisions in North Carolina.

Additionally, the CAMA gives the Coastal Resources Commission authority to continue the development of coastal policies for North Carolina. Pursuant to this authority the CRC is formulating additional policies with regard to energy facilities. Before incorporation into the CZM Program, policies will be subjected to numerous reviews as provided in Chapter 6 of the Program.

### Energy Facility Siting - CM Policies

#### Energy Policies

#### Energy Generating Facilities

It is State policy:

- (1) To provide fair regulation of public utilities (including energy generating facilities) in the interest of the public to promote adequate, economical and efficient utility services to all of the citizens and residents of the State, to foster a Statewide planning and coordinating program to promote continued growth of economical public utility services and to cooperate with other States and with the Federal Government in promoting and coordinating interstate and intrastate public utility services. As set forth and implemented under the authority of the Public Utilities Act (G.S. 62.2).
- (2) That construction of a facility for generating electricity to be used for furnishing public utility service shall not begin until a determination has been made that public convenience and necessity requires, or will require, such a facility. As set forth and implemented under the authority of the Public Utilities Act (G.S. 62-110.1).
- (3) No energy generating facility will be permitted until it receives appropriate permits from DNRCD and from any other State agency with applicable permitting authority. Necessary permits will in most instances include dredge and fill permits, air quality permits, NPDES permits, and sediment and erosion control permits. Criteria and standards which guide the issuance of these permits are included in Appendix C.

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- (1) To provide fair regulation of public utilities (including energy generating facilities) in the interest of the public to promote adequate, economical and efficient utility services to all of the citizens and residents of the State, to foster a Statewide planning and coordinating program to promote continued growth of economical public utility services and to cooperate with other States and with the Federal Government in promoting and coordinating interstate and intrastate public utility services. As set forth and implemented under the authority of the Public Utilities Act (G.S. 62.2).
- (2) That construction of a facility for generating electricity to be used for furnishing public utility service shall not begin until a determination has been made that public convenience and necessity requires, or will require, such a facility. As set forth and implemented under the authority of the Public Utilities Act (G.S. 62-110.1).
- (3) No energy generating facility will be permitted until it receives appropriate permits from DNRCD and from any other State agency with applicable permitting authority. Necessary permits will in most instances include dredge and fill permits, air quality permits, NPDES permits, and sediment and erosion control permits. Criteria and standards which guide the issuance of these permits are included in Appendix C.

## Petroleum Refineries

### It is State policy:

- (1) To promote the health, safety, and welfare of the citizens of this State by protecting the land and the waters which this State has jurisdiction from pollution by oil, oil products and oil by-products. As set forth and implemented under authority of the Oil Pollution Control Act (G.S. 143-215.75 et seq).
- (2) That local governments shall be encouraged to use land classification plans to guide the location of oil refineries, as set forth by the Land Policy Council under authority of the Land Policy Act (G.S. 113A-150).
- (3) That no facility for refining oil shall be constructed without a permit from the Secretary of Natural Resources and Community Development. As set forth and implemented under authority of the Oil Pollution Control Act of 1973 (G.S. 143-215.99).
- (4) That the DNRC will conduct an evaluation in conjunction with other agencies having environmental responsibilities of the effects on the State's natural and economic environment of any new or expanding industry or manufacturing plant (including petroleum refineries) locating in the coastal zone of North Carolina. As set forth and implemented under authority of G.S. 143B-437, Investigation of Impact of Proposed New and Expanding Industry.

## Outer Continental Shelf

### It is State policy:

- (1) To support an approach to offshore oil and gas exploration which will provide an adequate supply of energy while protecting the public environmental, social and economic interests in our coastal and offshore areas. As set forth by the Secretary of Administration in a special letter concerning the possible impacts associated with OCS lease sale #43 in April 1977.
- (2) That the State will take an active role in the OCS decision process in the review and comment on all OCS lease stipulations and operating orders prior to their approval. As set forth by the Secretary of Administration in a special letter concerning the possible impacts associated with OCS lease sale #43 in April 1977.

- (3) It is State policy to protect the public interest in natural oil and/or gas by establishing regulations to prohibit waste, compel rateable production, and protect the environment (G.S. 62-110).
- (4) That the DNRC must be contacted and a permit issued before any oil or gas well drilling may proceed. Each abandoned well and dry hole must be plugged according to DNRC rules. Allowing a gas or oil well to go wild or out of control is prohibited. As set forth and implemented under authority of the Oil and Gas Conservation Act (G.S. 113-381, et seq.). This authority extends only to the three mile State jurisdiction.
- (5) That discharges of oil upon any waters, tidal flats, beaches, or lands, or into any sewer, surface water drain, or other waters that drain into State waters is prohibited. As set forth and implemented under authority of the Oil Pollution Control Act (G.S. 143-215.75, et seq.).

#### Mining

It is State policy:

- (1) That before land is committed to high density urban development, a study of mineral resources be made. Land areas found to contain significant mineral resources should not be committed to urban development unless other reasonable alternatives are not available. As set forth by the Land Policy Council under authority of the Land Policy Act (G.S. 113A-150).
- (2) That lands with potentially valuable mineral deposits should be managed for productive resource utilization and provided with limited public services. Only development that is compatible with mineral production should be encouraged. These lands should be classified as rural under the land classification system. As set forth by the CRC's "State Guidelines for Local Planning" and implemented under authority of the CAMA.
- (3) That the usefulness, productivity, and scenic values of all lands and water involved in mining within the State will receive the greatest practical degree of protection and restoration. No mining shall be carried on in the State unless plans for such mining include reasonable provisions for protection of the environment and reclamation of the affected area of land. As set forth and implemented under authority of the Mining Act (G.S. 74-48)..

- (4) To prevent mining operations from: causing long-term adverse affect on wildlife, fisheries, public parks, forests, or recreation areas; violating air or water quality standards; creating a substantial physical hazard to neighboring structures; or resulting in landslides or sedimentation or pollution of waters. As set forth and implemented under authority of the Mining Act (G.S. 74-48).
- (5) To prevent mining activities from causing contamination of subsurface water supplies and/or salt water intrusion. As set forth and implemented under authority of the Water Use Act (G.S. 215.11).

## COASTAL ENERGY POLICIES

## A. General Coastal Energy Policies

Declaration:

It is hereby declared that the general welfare and public interest require that a reliable source of energy be made available to the citizens of North Carolina. It is further declared that the development of energy facilities within the State can serve important regional and national interests. However, unwise development of energy facilities can conflict with the public interest that rests in conserving and protecting the valuable land and water resources of the State, particularly coastal lands and waters. Therefore, in order to balance the public benefits attached to necessary energy development against the need to protect valuable coastal resources, the planning of future land uses and the exercise of regulatory authority should maximize wise energy development and minimize the likelihood of damage to public and private resources. To this end, the following will be specific policies of the State concerning the location of energy facilities within the North Carolina coastal zone.

Definitions:

1. Assessment - An analysis which fully discusses the environmental, economic and social consequences of a proposed project. At a minimum, the assessment should include the following information:
  - a. A full discussion of the preferred site for the project and of a reasonable and feasible alternative site(s). If a preferred site is within an AEC or is on a barrier island, at least one alternative not within an AEC or on a barrier island must be discussed. Each alternative shall be discussed with essentially the same depth of analysis as the preferred alternative.
  - b. A full discussion of the economic impacts, both positive and negative, of the proposed project and its alternatives. This discussion shall include analysis of any possible adverse impacts upon the ability of any governmental unit to furnish necessary services and facilities.
  - c. Any possible adverse impacts on estuarine and coastal resources.
  - d. Any possible adverse environmental impacts on existing industry or possible unreasonable limitations on the availability of natural resources, particularly water, for future industrial development.
  - e. Any possible significant adverse impacts on recreational uses and scenic resources.

- f. Any possible risk of danger to human life and property.
- g. Other specific data necessary for the various State and Federal agencies and commissions with jurisdiction to evaluate consistency of the proposed project with relevant standards and guidelines.
- h. A specific demonstration that the proposed project is consistent with relevant local land use plans and with guidelines governing land uses in areas of environmental concern.

Note: An EIS prepared under NEPA or an EIA required under existing State regulation will satisfy this definition if all issues listed above are addressed.

- 2. Major Energy Facility - Those projects which because of their size, magnitude and scope of impacts, have the potential to significantly affect the coastal zone. For purposes of this definition, major energy projects shall include, but are not necessarily limited to, the following:
  - a. Any facility capable of refining oil;
  - b. LPG-LNG terminals and associated storage, handling or processing facilities;
  - c. Any oil or gas storage facility that is capable of storing more than 15 million gallons on a single site;
  - d. Electric generating facilities 300 MW or greater in size;
  - e. Thermal, energy generation facilities.

IT IS STATE POLICY THAT:

- 1. The placement and operation of major energy facilities in the North Carolina coastal zone shall be done in a manner that allows for protection of the environment and with local and regional socioeconomic goals. The placement and operation of such facilities shall be consistent with established State standards and regulations and shall comply with local land use plans and with guidelines for land uses in areas of environmental concern.
- 2. Applicants for major energy facilities to be located in the North Carolina coastal zone shall, prior to construction, make a full disclosure of all costs and benefits associated with the project. This disclosure shall be prepared at the earliest feasible stage in planning for the project and shall be in the form of an impact assessment.

3. Local governments shall not unreasonably restrict the development of necessary energy facilities, however, they shall be encouraged to develop reasonable measures to accommodate those facilities that are needed and/or desired.
4. In coastal shoreline areas with recognized recreational benefits or with identified access problems, those major energy facilities that do not have technical requirements necessitating shorefront access shall be sited inland of the immediate coastal zone. In other instances when shoreline portions of the coastal zone are necessary or preferred locations, shoreline siting will be acceptable if it can be demonstrated that 1) coastal waters will be adequately protected, and 2) the public's rights to access will not be unreasonably restricted.

B. Directives to Staff:

1. CRC shall will work with affected DNRC and the North Carolina Department of Commerce representatives to formalize a mechanism for impact assessment of major energy projects. Specifically, the drafting of implementing regulations for G.C. 143B-437 (Investigation of Impact of New and Expanding Industry Law) will be pursued. This law calls for intra-departmental cooperation in the evaluation of impacts of new or expanded industry locating within the State. This provision could be implemented to effectively require an environmental impact assessment for a range of major industrial projects, including major energy projects. The main positive aspect of this approach is that such a procedure could be implemented on a statewide rather than a solely regional basis. If no feasible agreement could be reached within a specific time, staff should access more fully the feasibility of pursuing other options such as AEC revisions or amending the major development permit application to include an assessment for major facilities requiring the CAMA permit.
2. The CRC will encourage local governments to plan for major facilities (including energy facilities). Specifically, staff should consider ways that such interests can be addressed through 1) revisions to the State Guidelines for local planning, 2) use of coastal energy impact funds, and 3) helping fund other local initiatives to reasonably guide industrial development.
3. CRC staff, in conjunction with affected agencies, will develop general criteria to guide siting decisions of energy facilities articulated in Section 1 of North Carolina's Energy Facility Planning amendment. These criteria will not attempt to identify sites per se, but will be aimed at giving broad guidance on areas in which development will be encouraged or discouraged within the coastal zone.

4. Research will be done on the feasibility of using the Key Facilities AEC category in planning for energy facilities within the coastal zone. Specifically, staff should assess the various ramifications of such designation and present alternatives.

## NATIONAL INTEREST CONSIDERATIONS

The North Carolina Coastal Management Program recognizes that the increasing State and national demand for energy will necessitate the planning and siting of facilities in the coastal area as compared with those of other States. Energy facilities desiring to locate there will be accommodated, if consistent with CM policies.

North Carolina's siting process includes many features to allow for a consideration of national interests. To further assure that energy facilities are not unreasonably excluded from the coastal zone, the Coastal Resources Commission has authority under CAMA (GS 113A-113(b)(7)) to designate areas which are or may be impacted by key facilities as areas of environmental concern. Pursuant to CAMA authority as well, the CRC can then control development within the designated AEC through the prescribed permit program.

Furthermore, through GS 113A-111 the Commission can assure that within AEC's, local regulations and ordinances are consistent with management standards and objectives promulgated for the area. In effect, through designating sites as "key facilities" the State can recognize uses of regional or national benefit and provide a procedure to ensure that they are not unreasonably excluded from the coastal zone.

The procedure for designating a key facility AEC is the same procedure as for other AEC's. The need for a site would need to be substantiated. Regulations for the AEC would be developed by the Commission following public hearings and agency review.

In addition to "key facilities" designation, the State has power of purchase and condemnation. The Utilities Commission has right of eminent domain. Also, where it determines a site is needed for power plant use the State has the power to purchase. Finally, the State has reserved areas in the coastal zone for pipeline rights of way.

Through these management techniques and legal authorities the State can prevent unreasonable exclusion of energy facilities. In effect, the State has "override" authority through key facilities AEC designation. It should be pointed out that because of expected low impact by energy facilities coupled with ample available land and desire by most local governments to attract industry that State override is not expected to be necessary. However, in those cases where conflicts arise a mechanism does exist to resolve such issues.

## OCS Oil and Gas Development

Energy related facilities which could locate in North Carolina as a result of OCS exploration and development pose special concerns in terms of national interest and planning techniques. As is the case with other energy related facilities, provision for contested OCS related facilities could be made through utilization of the "Key Facilities" AEC category.

Unlike other energy facilities which are brought in through State recruitment measures, OCS-related facilities and their impacts will be managed through monitoring and review of the OCS leasing and development process; the exercise of the Federal consistency provisions of the FCZMA relevant to exploiting OCS resources and the location of onshore facilities; and the State's permitting authority relative to oil or gas exploration in State waters, oil pollution control, and location of oil or gas pipelines through the combined dredge and fill and CAMA permit provisions. Specifically,

1. CM Role in Reviewing OCS Exploration and Development - During the past few years, the State has developed an increasing interest in OCS activities. This is due in part to exploration and development activities which are expected as a result of leases in the Southeast Georgia Embayment. Although no activity is presently expected offshore the North Carolina coast, the State recognizes that this situation could change; therefore, it has been participating along with other southeastern States in studies aimed at collecting informational needs pertaining to the impacts associated with OCS development. To better coordinate State efforts in analyzing expected impacts and strategies to deal with possible onshore development, the CM office within NRCD will take a lead role in reviewing the OCS leasing process as it affects North Carolina. This will include coordination and consultation with other State agencies with expertise in order to consider a consolidated State viewpoint. Also through review of Environmental Impact Statements prepared on OCS leasing and development actions and on U.S.G.S. operating orders, the CM office can advise the Federal Government on possible adverse impacts should OCS development occur.
2. Federal Consistency - Section 307(c)(3)(B) of the FCZMA requires that "any person who submits to the Secretary of the Interior any plan for the exploration and development, or production from any area which has been leased under the OCS Lands Act. . .shall attach to each plan a certification that each activity complies with such State's approved management program and will be carried out in a manner which is consistent with the program.

Therefore, the CM agency will also review for conformance to CM policies (1) any Federal leasing actions that might take place in State coastal waters, and (2) plans subject to the U.S. Department of the Interior for exploration or development or production from an OCS lease area adjacent to the State's coastal waters, including applications for pipeline rights of way.

Appropriate CM policies will be utilized in any consistency determinations of this type (policies found in Section 3 plus any relevant policies of water quality, air quality, dredging, etc. are required). Specifically, the following criteria will be used to judge the consistency of OCS development with the CM program:

- Risks of environmental harm to fish spawning areas are assessed and minimized.
- Risks of spills from OCS operations and possible trajectories are evaluated and appropriate mitigation measures employed.
- Dredging, spoil disposal and construction of structures is minimized. Any necessary action of this sort should minimize damage to the marine environment.
- Potential damage or interference with traditional fishing grounds or areas with high biological/recreational value (reefs, rock outcrops) is avoided.
- Placement of structures in geologically hazardous or biologically sensitive areas is avoided.
- Potential wildlife destruction or relocation is assessed and minimized.
- Planned onshore facilities conform to relevant policies enumerated in Section 3.
- Planned onshore facilities are in conformance with the appropriate local land use plan(s).

### 3. CM Planning and Assistance Efforts

North Carolina finds itself in a unique position regarding OCS development in that it lies either to the north or south of major leasing areas. For this reason, only minor impacts are expected in the foreseeable future; however, future impacts are harder to predict. Therefore, in an effort to prepare for possible impacts, the CM agency will coordinate with other affected State agencies in order to identify and develop information that will be pertinent to OCS related development. Such information should prove valuable in future siting decisions and in further policy development.

The CM agency, as part of its continual local planning program, will also work with local governments in identifying areas where such development could best be located and encourage them to identify such areas as part of their work program for energy facility planning. Guidance to aid in such an undertaking will be developed on a State level and incorporated into the State Guidelines for Local Planning.

Finally, the CM agency, in conjunction with the Deputy Secretary for NRC's office, will work with communities to make use of available CEIP funds provided under the FCZMA Amendments of 1976 to communities impacted by energy related development.

#### 4. Other State Agencies and Their Roles

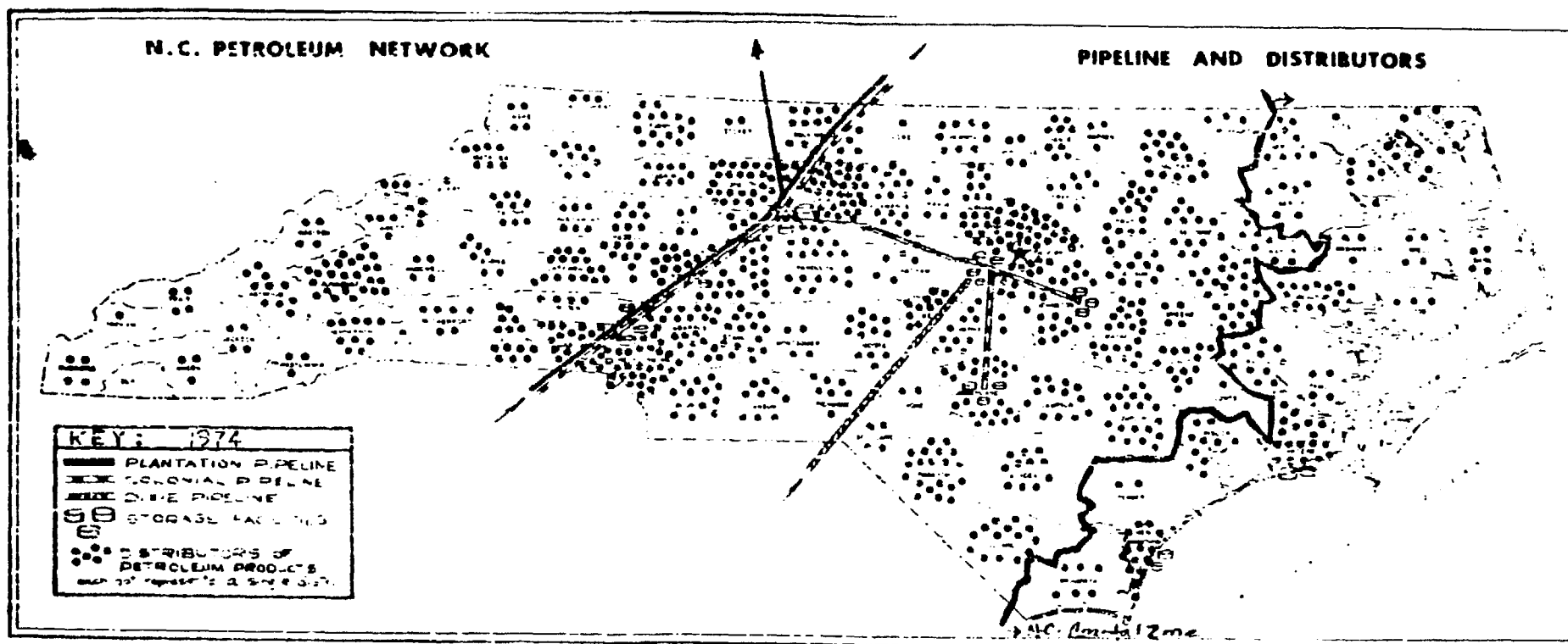
- Division of Land Resources (G.S. 113-381) - This division is empowered to require a permit before any exploratory drilling for oil or gas at any location in the State can take place. It is also authorized to require a permit before any geological, geophysical and other surveys and investigations (including seismic) for the discovery of oil, gas or other mineral prospects in State-owned waters can occur. In each case regulations drawn up by the division must be adhered to before a permit will be issued.
- Division of Environmental Management (G.S. 143-215.75) - This division is empowered to require a permit before discharging any oil into State waters. Any permit granted may contain such terms and conditions as are deemed necessary to conserve and protect the lands, waters and public interests of the State. The CM agency will work with DEM in cases where actions are to take place in coastal waters to insure that coastal policies and objectives are met.
- Division of Marine Fisheries (G.S. 113-229) - This division is empowered to require a permit before any excavation or filling project is begun in any estuarine waters, tidelands, marshlands or State-owned lakes. Regulations of the division take into account environmental effects to water quality, fishery and wildlife resources as well as safety and welfare concerns. Though not directly empowered to site pipelines, the DMF can indirectly affect siting through its mandate to protect coastal resources in estuarine waters. The CM agency has and will continue to closely coordinate its activities with this division in order that CM concerns be addressed.
- Coastal Resources Commission (G.S. 113A-113(b)(7)) - This Commission is empowered to require a CAMA permit before development take place in a duly designated Area of Environmental Concern (AEC). Therefore, activities occurring within the State's territorial waters, marshlands, hazard areas, etc. will require CRC approval. Project standards are found in Chapter 5.

## Deep Water Port

If the construction of a deep water port were to be planned off the North Carolina coast, it is expected that its location would be outside the State's jurisdiction because of required depths for VLCC's. A deep water port will require a Federal permit and probably an EIS. The role the CM agency will play in deep water port siting is through addressing concerns provided for in the Federal consistency provisions. (It is one of the Federal permits and licenses listed to be monitored for consistency.)

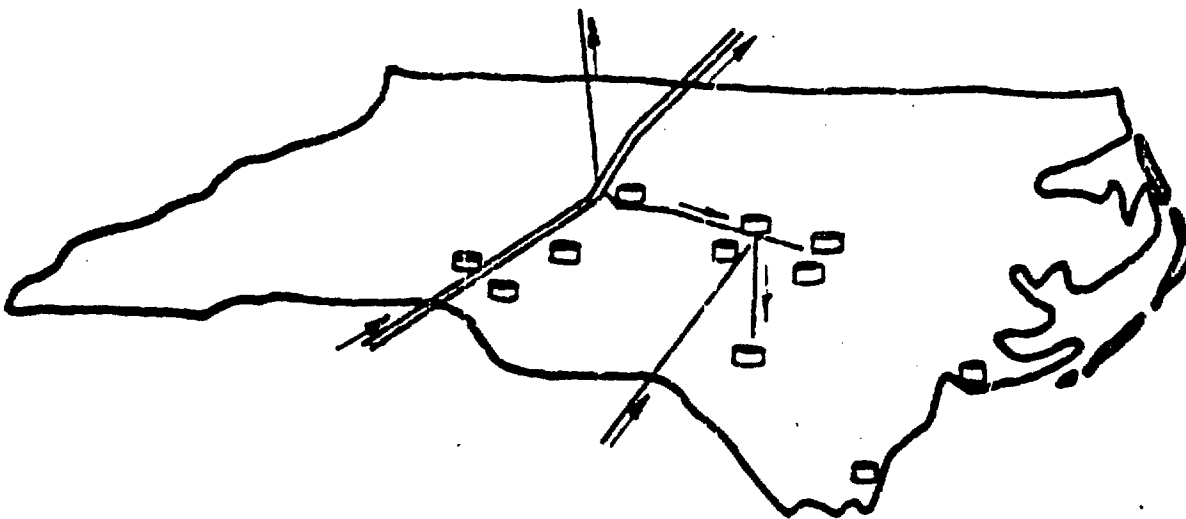
### Implementation:

- Deepwater Port Licenses (P.L. 93-627) - These are granted by the U.S. Secretary of Transportation. Conditions for licensing include joining an oil spill liability fund; consistency with national policy; non-interference with navigation law; use of best available technology to prevent adverse environmental impacts, consistency with the State coastal plan, and gubernatorial approval. Through this Act, North Carolina has the ability to indirectly influence siting decisions beyond the 3-mile limit.



**FIGURE 2: Primary Storage Terminals in North Carolina Controlled by Prime Suppliers**

<u>Location</u>	<u>Terminal Capacity</u>	<u>Products Stored at Site</u>
Apex	16,800,000 gall.	Propane
Apex	4,792,833 "	Gasoline, Aviation Fuel Middle Distillates
Asheville	167,484 "	Gasoline, Middle Dist.
Charlotte (Paw Creek)	94,547,685 "	Gasoline, Aviation Fuel, Middle Distillates
Fayetteville	5,488,863 "	Gasoline, Aviation Fuel, Middle Distillates
Greensboro	129,926,583 "	Gasoline, Aviation Fuel, Middle Distillates
Morehead City	7,140,000 "	Residual
Morehead City (Military)	25,200,000 "	Aviation Fuels
Salisbury	7,686,000 "	Gasoline, Middle Dist.
Selma	78,880,793 "	Gasoline, Aviation Fuel, Middle Distillates
Wilmington	327,433,974 "	Gasoline, Residual, Middle Distillates, Petro-Chem. Agricultural Chemicals, Solvents, Additives



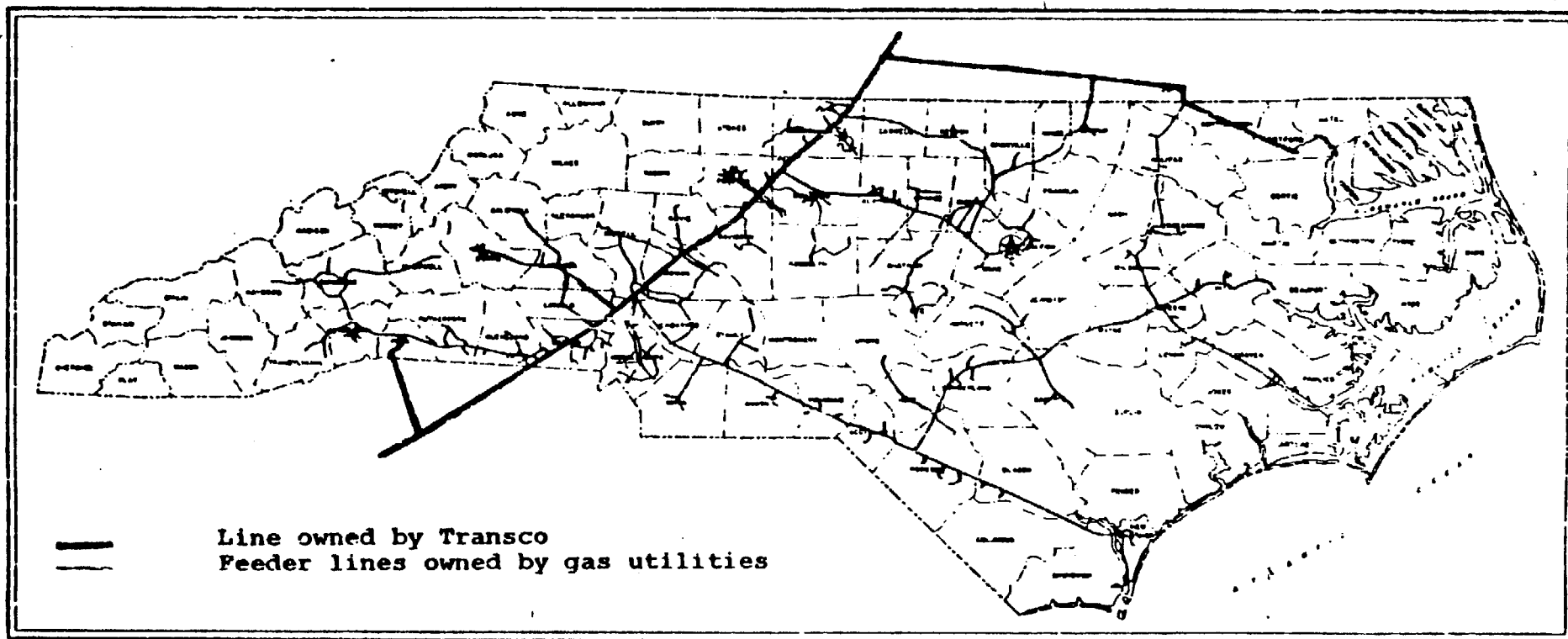
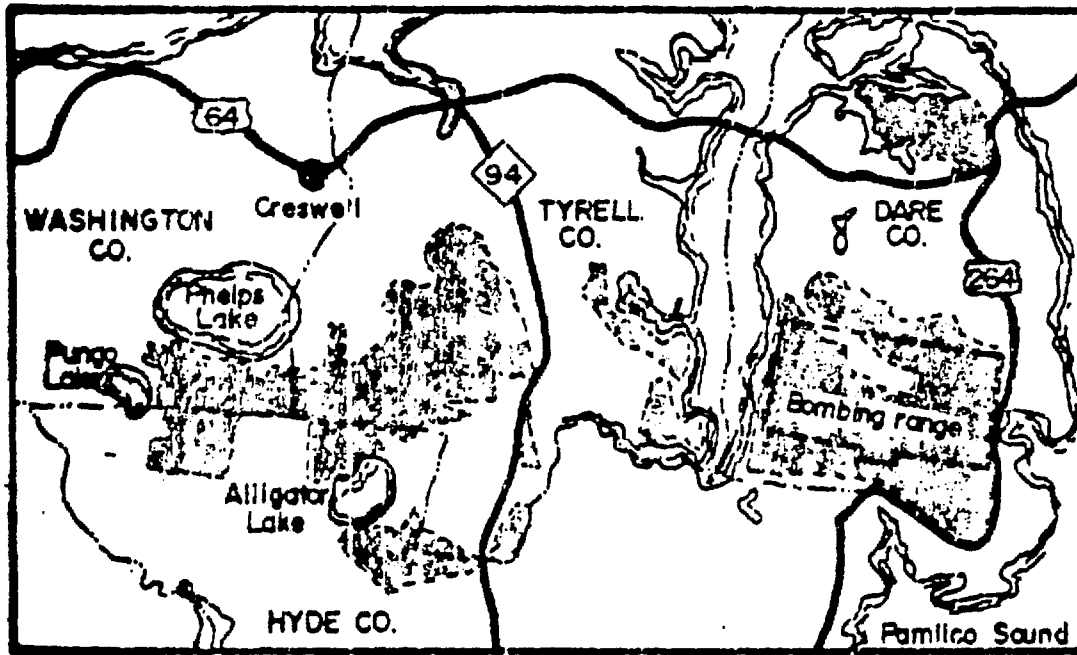


FIGURE 3: PIPELINES IN NORTH CAROLINA'S  
NATURAL GAS DISTRIBUTION SYSTEM

FIGURE 4: Coastal Areas With Extensive Peat Deposits



Shaded areas mark peat bogs.

## CONCLUSION

North Carolina's energy facility siting process is one that has evolved in response to providing sites for a limited range of energy facilities. Because of a lack of energy activity in the past, the State has and will continue to rely on basically the same process it uses to site any major facility within the State. These functions are split between the lead agency NRCD and the North Carolina Department of Commerce and are characterized by both informal and formal working arrangements. The major responsibilities are divided so that the Department of Commerce has early contact with a potential facility and guides early decisions regarding site suitability and location. The NRCD is the final determiner of sites through regulating land and water impacts via the permit process. In a very real sense, site suitability and ultimate site location is determined through this process.

Implementation of CM agency concerns in the process will be accomplished through use of existing management tools, and interagency cooperation. Consideration will be effectuated by State consistency provisions outlined in Executive Order #15. Therefore, through CAMA permitting authority, other permitting authorities, permit review and monitoring, and working arrangements concerning energy facilities formalized as part of the implementation of the consistency process, the CM agency should be able to have its concerns addressed in the overall process.

Should the occasion arise that a facility is unreasonably excluded by local regulations, the "Key Facilities" AEC category is one means by which the Coastal Resources Commission can directly override local authority and permit its location.

Prime CM objectives are outlined in the policy section of this chapter. In essence, the CM agency is concerned that shoreline-dependent facilities are sited in appropriate coastal locations (away from traditional rural, recreational or cultural areas) and that those facilities which are not shoreline dependent are sited out of the immediate coastal zone. In both cases the permit process will be relied upon to localize a site. Since many CM policies are based on existing statutory authority, fulfillment of relevant permit requirements plus conformance to basic siting policies will be used to fulfill consistency requirements.

## C. SHORELINE EROSION AND MITIGATION PLANNING

### Introduction

North Carolina's Office of Coastal Management submits the following shoreline erosion/mitigation planning process to fulfill the requirements of Section 305(b)(9) of the Federal Coastal Zone Management Act, as amended.

The planning process has addressed each of the five requirements of Section 305(b)(9) in a manner that is summarized below. Full explanations of the planning process follow the summaries.

In order to meet the requirements of Subsection 305(b)(9) of the Act, North Carolina was required to submit a description of a planning process that can assess the effects of shoreline erosion. The evaluation must include an assessment of ways to mitigate, control or restore areas adversely affected by erosion.

"This process must include:

(1) A method for assessing the effects of shoreline erosion;"

North Carolina has for some years sponsored or conducted studies of the effects of shoreline erosion and will continue to do so in the future. In order to satisfy this requirement, the State will therefore rely on the extensive data on research that has been compiled to date and on an aggressive data gathering effort in the future. A summary of the findings of the completed studies is found in Section 1 of this submission.

"(2) Articulation of State policies pertaining to erosion, including policies regarding preferences for nonstructural, structural and/or no controls;"

State policies pertaining to erosion control have been derived from various permit programs (including the Coastal Area Management Act's areas of environmental concern permit program) as well as the State's program for participation in civil works projects. State policies pertaining to erosion control and mitigation clearly prefer nonstructural techniques except in cases where structural controls offer the best solution to the protection of public facilities, resources and welfare.

"(3) A method for designating areas for erosion control, mitigation and/or restoration as areas of particular concern or areas for preservation and restoration, if appropriate;"

Areas subject to severe erosion have been designated by the Coastal Resources Commission as areas of environmental concern following the process outlined in Chapter Five of the Coastal Management Plan. In addition, areas requiring State participation in the development of erosion control projects are designated by the North Carolina Department of Natural Resources and Community Development using a methodology explained later in the text.

"(4) Procedures for managing the effects of erosion, including nonstructural procedures;"

North Carolina manages the effects of erosion primarily through the use of existing permitting and review programs. However, State participation in civil works projects either through cost sharing programs with the Federal Government or through exclusive State-local cooperation also contribute significantly to State management procedures.

"(5) An identification of legal authorities, funding programs and other techniques that can be used to meet management needs."

This requirement is met by identifying existing authorities, funding programs and technical extension services that are available at the local, State and Federal levels.

## Format

The following format will be used to describe how the above requirement will be met.

Section 1: A Method for Assessing the Effects of Shoreline Erosion:  
A Summary of Findings

Section 2(a): A Method for Designating Areas for Erosion Control Using  
Non-Structural Means, Procedures for Managing the Effects  
of Erosion, and Articulation of State Policies Pertaining  
to Erosion

Section 2(b): A Method for Designating Areas for Erosion Control Using  
Structural Means, Procedures for Managing the Effects of  
Erosion, and Articulation of State Policies (Structural)  
Pertaining to Erosion

Section 3: Identification of Legal Authorities, Funding Programs,  
and Other Management Needs

Section (1): A Method for Assessing the Effects of Shoreline Erosion

Research and study of the effects of shoreline erosion has continued in North Carolina for many years. Many early surveys identifying the positions of inlets and the configurations of the Outer Banks were conducted in order to identify safe navigation channels. Later, with the placement of fortification along the coast, studies were made of the movement of the island shorelines. More recently, as development of the coastal shoreline accelerated, numerous studies were made of the amount and effects of shoreline erosion. Much of this work was initiated by the Corps of Engineers in response to the various tropical storms that have dramatically affected the coast. Hardy and Carney (1962) list about 60 tropical cyclones as having affected North Carolina during the first 62 years of this century.\* The Corps has been the primary government body involved in developing engineering techniques to protect coastal development from the serious effects of shoreline erosion and consequently they have taken an aggressive role in documenting the effects of erosion. Further interest and additional studies have been spawned even more recently by the universities and the State of North Carolina as the incompatibility of development patterns with the natural movements of the barrier islands and coastal shorelines has become obvious. The "Ash Wednesday" storm of March 7, 1962, may have demonstrated the effects of this incompatibility

\* Hardy, A.V. and C.B. Carney, 1962. North Carolina Hurricanes, Department of Commerce Weather Bureau, November.

better than any recent disturbance. The Corps of Engineers estimated that the total damage received by the resort towns of Nags Head, Kill Devil Hills and Kitty Hawk from this single storm amounted to over \$2 million\* (Corps of Engineers, 1965).

The State of North Carolina in 1974 compiled data that could serve as a basis for assessing the effects of coastal erosion. The resulting information formed Chapter 10 of the North Carolina Water Plan entitled "Coastal Erosion." This document contained the first complete assessment of erosion along the 308 miles of ocean shoreline. The study gathered together under one cover the most relevant studies identifying the causes of ocean erosion, patterns of erosion and accretion, the policies of the State regarding erosion, the agencies concerned with erosion and a description of coastal erosion projects underway.

Not long after the completion of this document, the State recognized the need to assess the effects of erosion occurring along the shorelines adjacent to the major sounds and coastal rivers. Through the leadership of the Soil Conservation Service, an inventory of 1,890 miles of estuarine shoreline was undertaken. This study estimated the extent of fastland erosion along various reaches and quantified for the first time the amount of productive land lost to the erosion occurring along the sounds, rivers and bays. The results of this study indicated that over one thousand miles of shoreline studied were eroding and that two million tons of sediment was being derived annually from this erosion.

Because of the seriousness of the erosion problem pointed out by this study, the State of North Carolina and the Sea Grant Program undertook more detailed investigations. A Sea Grant study conducted at East Carolina University inventoried the shorelines of the major sounds in order to characterize the types of erosion occurring and the shoreline type most susceptible to being eroded. The study characterized the shoreline by soil types, bank height, vegetation, etc., and determined the typical erosion rates associated with each type. The researchers also inventoried the locations and extent of man-modified shorelines with bulkheads, groins and revetments along the estuarine shorelines. This study indicated the extent of modifications and evaluated the effects of such modifications. The North Carolina Office of Coastal Management concurrently completed an evaluation of shoreline erosion in the southern coastal counties that had previously not been studied. The results of this study indicated serious erosion associated with the operation of the Atlantic Intra-coastal Waterway.

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\* Corps of Engineers, 1965. Interim Survey Report of Hurricane Protection. U. S. Army Engineer District, Wilmington, North Carolina April.

In addition, the Office of Coastal Management in cooperation with the SCS and the Division of Land Resources has completed and published a Soils Survey of the Outer Banks which will assist in the identification of soil types particularly susceptible to different soil erosion processes.

The Office of Coastal Management with the assistance of the Division of Marine Fisheries presently is completing a statistical analysis of the movement of inlets along North Carolina's coast. The resulting data will represent the first in-depth analysis of the historical and projected future migration patterns of North Carolina's inlets. Preliminary results indicate a wide variability in erosion patterns that documents the extreme hazards to development located adjacent to inlets.

North Carolina will continue to aggressively pursue the identification of areas subject to erosion and the documentation of the effects of erosion. These studies are and will continue to be utilized in the designation of areas of environmental concern by the CRC and the establishment of appropriate permit standards. In addition, local governments will be requested to identify areas experiencing critical erosion in their future local planning efforts. On the basis of the various studies undertaken and planned for North Carolina, the Office of Coastal Management concludes that an adequate methodology exists for assessing the effects of shoreline erosion and mitigation. A summary of the results of earlier studies follows.

## SUMMARY OF FINDINGS

Bay and Estuarine Shoreline

North Carolina has approximately 3,341 miles of bay and estuarine shoreline. The nature of erosion along these inland shores has been assessed by studies that have been completed within the last few years. These studies will form the basis of our assessment effort.

The bay and estuarine shoreline for the purpose of this summary, can be divided into two regions. The two areas are: 1) the northern region, which includes the shorelines bordering the sounds of Pamlico and Albemarle and 2) the southern region, which includes the inland shores along the Atlantic Intracoastal Waterway and adjacent waters.

Albemarle and Pamlico Region

The inland shores bordering the sounds of Albemarle and Pamlico responds to natural processes created by the sounds.

In their initial effort to assess conditions in this region, the U.S. Army Corps of Engineers state in their "National Shoreline Study" that erosion in this area is directly related to wave action created by winds blowing across the sounds. The large waves in conjunction with high tide erode the banks by undercutting the easily erodible bank material found in this area.

Severe Erosion (erosion greater than two feet per year) was documented along the exposed sandy beaches of the Albemarle Sound and its tributaries, as well as both sides of the Neuse and Pamlico Rivers.

Non-Critical Erosion (erosion between 1-2 feet per year) was identified in other areas of this region.

The U.S. Soil Conservation Service's "Shoreline Erosion Inventory, North Carolina" expanded the findings of shoreline conditions in this area. Their study of the shorelines found in the 18 coastal counties indicated that 1) banks with a northeast and southeast exposure seem to be the most severe in terms of erosion and 2) major storms of long duration occurring with high tides generally produce the greatest erosion rates.

A subsequent study by researchers at East Carolina University entitled "Estuarine Shoreline Erosion in the Albemarle-Pamlico Region of North Carolina" delineated the types of shorelines found in this region and assessed the effects of erosion on these shores.

Three types of shorelines were identified: 1) banks (low, high and bluff); 2) swamp forest; 3) grass marsh. Their analysis of these shores indicated the following:

1) Banks

- A. Low (1 - 5 feet) - Low banks which consist of sand-clay material are moderately to highly susceptible to erosion.
- B. High (5 - 20 feet) - High banks are susceptible to erosion similar to that of the low banks, except that they are much more dramatic.
- C. Bluff (greater than 20 feet) - Erosion of these banks are not as dramatic, since a much greater volume of eroded sediments is produced with each foot of eroded bank face.

2) Swamp Forest - Swamp forest shorelines do not erode at a rate comparable to the other two types of shorelines. The ability of the forest to dissipate wave energy is the primary reason why erosion along these shores have been classified as negligible.

3) Grass Marsh - Grass marsh shorelines erode as a result of waves removing the soft, peat like material which form the base of the marsh.

Erosion along these shores is significant when the marsh is exposed to strong wave action.

A summary of the mean erosion rate (ft./yr.) for each type of shoreline is provided below.

<u>Shoreline Type</u>	<u>Erosion Rate (Ft/Yr)</u>	
	<u>Protected</u>	<u>Exposed</u>
1. Banks		
A. Low Bank	1	3-8
B. High Bank	1	2-5
C. Bluff	1/2	1-2
2. Swamp Forest	Negligible	Negligible
3. Grass march	2	6-20

The following conclusions have been drawn on the shoreline erosion problem in the Albemarle-Pamlico Region:

- Swamp forest and grass marsh function as natural barriers to shoreline erosion.
- Covers or other natural segments of shoreline lying between resistant headlands respond to erosive forces as a unit and should be treated as such when developing local shoreline protection strategy.
- Shoreline developers should utilize existing erosion data available to determine the best approach to a shoreline erosion problem.

#### Atlantic Intracoastal Waterway

Shoreline conditions along the Atlantic Intracoastal Waterway were inventoried in 1977, by researchers at East Carolina University with the assistance of the Coastal Resources Commission.

Through their research efforts, three types of shorelines were identified in this region: 1) Sand Banks; 2) Sand Bank with Marsh Fringe; 3) Marsh Grass.

An analysis of these shorelines and their susceptibility to erode indicate the following:

- 1) Sand Banks      - Sand Banks with little or no marsh fringe will erode quite readily since they are composed of unconsolidated sand.
- 2) Sand Banks with Marsh Fringe      - Sand banks with fringing marsh are considered to be the most stable of the three types of shoreline. This is primarily due to the marsh fringe which serves as a barrier that dissipate water surges on the sand banks.
- 3) Marsh Grass      - Marsh grass shorelines experience erosion primarily during low tides when waves or water surges break directly in front of the marsh causing undercutting of the peat material. During high tides, the waves or surges cover the banks and the baffling effect of the grass dissipates wave or surge energy.

A summary of the Average Erosion Rate (Ft/Yr) for each type of shoreline points out their susceptibility to erosion.

- |                                 |   |
|---------------------------------|---|
| 1) Sand Banks                   | 2 |
| 2) Sand Banks with Marsh Fringe | 1 |
| 3) Marsh Grass                  | 1 |

A summary of the inventory study shows that erosion along the Atlantic Intracoastal Waterway is primarily attributable to boat wakes. In addition, erosion rates fluctuate with the type and frequency of traffic that travels the waterway.

Low tides in conjunction with boat activity help to intensify the rate of erosion along the shores. During low tide, boat wakes or water surges break directly in front of the soft banks initiating undercutting of the shoreline. In addition, rates of erosion may vary considerably between adjacent segments of the shoreline.

The following conclusions have been drawn on the estuarine shoreline-erosion problem along the Atlantic Intracoastal Waterway:

- Erosion is induced primarily by the activities of humans.
- Any alteration of the shoreline that must be made in order to cope with erosion should be viewed as solutions to a man-made problem.
- Erosion of the shoreline could be considered as a problem only for those people who purchase property without full consideration of the consequences of owning waterfront property. This approach should be considered in light of the fact that the AIWW predates most real estate developments along its shoreline.
- Portions of eroding bank shoreline can and should be controlled through the use of shoreline protection techniques.

The U.S. Soil Conservation Service inventory also included a yearly erosion rate for each coastal county which has been included in this summary to show the criticality of erosion along the inland shoreline.

AVERAGE EROSION RATES (FT/YR) PER COUNTY  
(U.S. Soil Conservation Service)

Beaufort	1.7	Hyde	3.0
Bertie	0.92	Onslow	1.1
Camden	2.1	Pamlico	3.5
Carteret	2.79	Pasquotank	2.9
Chowan	0.49	Perquimans	1.7
Craven	3.8	Tyrrell	2.0
Currituck	1.13	Washington	4.5
Dare	2.0		

The average erosion rate given for each county is an average rate based on the total period of time covered by the study. The rate for any single one-year period could differ considerably because of varying storm occurrences.

### Ocean Shoreline

Erosion along the 308 miles of ocean shoreline has been documented by a number of inventory studies within the last few years.

The investigative study by the U.S. Army Corps of Engineers entitled "The National Shoreline Inventory Study, North Carolina" found that:

- Nearly 60% or close to 189 miles of the 308 miles of ocean shoreline was experiencing erosion greater than 2 feet per year.
- Erosion is being experienced along the entire shoreline; however, severe erosion is concentrated on the downdrift sides of tidal inlets and around areas which were heavily developed.

Their study indicated that ocean shoreline erosion is due to littoral drift or transport of beach material deposited by storms and strong waves breaking on the soft, sandy banks.

Large quantities of sand along these shores are moved by water currents washing across the near-shore or the wind sweeping over the dry, sandy beaches. The sand is carried along in whatever direction the predominating current is moving. Along the shores of North Carolina, the direction of the current, in most cases, is south.

In many areas of North Carolina, severe erosion occurs during the stormier winter months followed by accretion during the calmer summer season.

In addition to the ocean erosion processes mentioned; north easterers, the daily fluctuation of tides and long range variations in sea level also have been classified as erosion variables.

A summary of each coastal county with ocean shoreline shows the extent of erosion.

Currituck, Dare and Hyde - Erosion is considered to be moderate to heavy from Hatteras Inlet to Oregon Inlet.

Carteret - Moderate to heavy erosion is being experienced off Shackleford Banks. These areas are considered to be the most exposed areas on the Eastern Seaboard. Erosion is primarily attributed to

the high tides and wind generated waves produced by storm wash. Erosion rates of 3 to 3.5 feet per year have been documented. The coast from the Onslow County line to Bogue Inlet has exhibited small to moderate rates of erosion.

Onslow

- Erosion in this area has been considerable in times of hurricane exposures with most damage and shoreline changes due to high wave attacks. Critical erosion (2 ft/yr or greater) also has been documented for 5 miles of Onslow Beach northeast of New River Inlet.

Pender

- Erosion in this area is primarily due to hurricane and storm exposures. Moderate to heavy erosion has been documented for Ashe Island including Surf City and Topsail Beach.

New Hanover

- Erosion is considered critical in the Fort Fisher area and the north end of Carolina Beach. Erosion in this area is largely the result of the retention of littoral material at coastal inlets and on shoals fronting the cape. Fort Fisher has experienced one of the highest erosion rates of ocean shoreline in the entire State.

Erosion in the vicinity of Wrightsville Beach is considered to be moderate to heavy.

Brunswick

- Moderate to heavy erosion has been experienced in the areas of Long Beach, Holden Beach, Yaupon Beach and Caswell Beach.

(NATIONAL SHORELINE INVENTORY, NORTH CAROLINA)  
U.S. Army Corps of Engineers - 1971

<u>County</u>	<u>No. of Miles of Ocean Shoreline</u>	<u>No. of Miles of Critically Eroding Shoreline</u>
Currituck	23	19
Dare	85	117
Hyde	17	9
Carteret	83	30
Onslow	27	8
Pender	17	7
New Hanover	27	18
Brunswick	41	33

## Tidal Inlets

The 22 tidal inlets along the ocean shoreline have in the past and are presently migrating in response to dynamic natural processes found along the coast.

Investigative findings on inlets show that their existence in the southern part of the State is quite prevalent as compared to the northern section. One explanation for this unequal occurrence is that the majority of the inlets in the northern section have closed within the last 20 years. A lack of heavy development in this area does not warrant reopening.

A study of the migration trend of these inlets indicates a gradual migration to the south. As a result of this migration, most of them have been classified as being unstable and require dredging in order to remain stable for navigational purposes.

Along the ocean shoreline of North Carolina, tidal inlets play a major role in eroding the shoreline in conjunction with littoral currents. Critical erosion has been identified on the downdrift sides of inlets which is a result of the depositing of beach material by the littoral regime in the mouth of the inlet. This loss of transported material is compensated for, however, through its ability to increase its carrying capacity and eroding ability on the downdrift shoreline.

### SUMMARY OF THE STABILITY OF CERTAIN INLETS (NORTH CAROLINA WATER PLAN PROGRESS REPORT - 1974)

Hatteras Inlet	- Unstable navigable inlet
Ocracoke	- Navigable Inlet
Drum	- Unstabilized navigable inlet
Barden	- Unstabilized navigable inlet
Beaufort	- Deep-Draft navigable inlet
Bogue	- Unstabilized navigable inlet
Bear and Brown	- Unimproved non-navigable inlets
New River	- Unstable navigable inlet
New Topsail	- Unstabilized navigable inlet
Old Topsail, Rich and Mason	- Open but not maintained as navigable inlets

Masonboro	- Partially stabilized navigable inlet
Mouth of Cape Fear River	- Stable navigable inlet
Lockwoods Folly	- Navigable inlet
Shallotte Tubbs and Mad	- Navigable unstable inlet

## ANNOTATED BIBLIOGRAPHY

Bell V., O'Connor, M.O., Riggs, S. Estuarine Shoreline Erosion in the Albemarle - Pamlico Region of North Carolina, East Carolina University, 1975.

A detailed examination of the different types of Estuarine Shoreline found in the northern counties of (1) Beaufort, (2) Bertie, (3) Chowan, (4) Tyrrell, and (5) Washington.

Recommended erosion controls are briefly discussed in terms of their advantage in this area.

Boc, S., Langfelder, J., An Analysis of Beach Overwash Along North Carolina's Coast, Center for Marine and Coastal Studies-North Carolina State University, Report No. 77-9, 1977.

An initial survey study of beach overwash along the ocean shoreline.

Areas that have experienced this natural process and are susceptible to future attacks are identified and delineated on maps.

Hartness, T.S., Pearson, D., Estuarine Shoreline Inventory For Pender, New Hanover, and Brunswick Counties, North Carolina, East Carolina University, 1977.

An inventory study of the different types of shoreline found along the Atlantic Intracoastal Waterway.

Included in the study is an assessment of erosion in this region and recommended methods of controlling or tapering this process.

Knowles, C.E., Langfelder, J., McDonald, R. A Preliminary Study of Storm Induced Beach Erosion for North Carolina, Center for Marine and Coastal Studies - North Carolina State University, Report No.

An initial survey of storm induced erosion along the coast of North Carolina.

Preliminary recommendations on beach development limits and range of recession lines for one in twenty-five years and a hundred years storm return frequency are presented.

Langfelder, J., French, T., McDonald, R., and Ledbetter, R., A Historical Review of Some of North Carolina's Coastal Inlets, Center for Marine and Coastal Studies - North Carolina State University-Report No. 74-1.

A quantitative study of the tidal inlets found along the coast of North Carolina. Each of the twenty-five inlets are analyzed according to their characteristics, past migration and future migration trend.

North Carolina Water Plan - Progress Report, Chapter 10. Coastal Erosion, 1974.

An inventory review of relevant data on ocean front erosion.

This study includes relevant information on the Causes of Erosion, Patterns of Erosion and Accretion and Maps of the entire ocean fronting including tidal inlets.

Selected local ordinances, State and Federal regulations and policies pertaining to erosion are also reviewed.

North Carolina Division of Marine Fisheries, Inlet Hazard Areas, Progress Report, 1978.

Technical report on the identification and delineation of hazard areas adjacent to existing inlets of North Carolina.

Stirewalt, G. L., Ingram, R. L., Aerial Photographic Study of Shoreline Erosion and Deposition, Pamlico Sound, North Carolina. University of North Carolina.

An indepth study of the changes in shoreline morphology cause by erosion along both the mainland and barrier island sides of Pamlico Sound.

U.S. Corps of Engineers, Investigation of Erosion, Carolina Beach, N. C., Wilmington District. 1970

An investigative study on the conditions along the beachfill comprising the Carolina Beach Hurricane and Shore Protection Project.

U.S. Army Corps of Engineers, Fort Fisher and Vicinity, North Carolina Survey Report of Beach Erosion Control, Wilmington District.

An investigative survey on the cause and effects of erosion along the shores fronting the Fort Fisher Historic Site and the immediately adjoining shore south of the site.

U.S. Army Corps of Engineers, Natural Shoreline Study, State of North Carolina Regional Inventory Report, Washington, 1972.

An investigative appraisal and assessment inventory of the cause and extent of ocean and estuarine shoreline erosion along the coast of North Carolina.

Data on shoreline ownership, use, present development, and where shoreline control structures may be justified are included.

U.S. Soil Conservation Service, Shoreline Erosion Inventory, North Carolina, Raleigh, N.C., 1975.

An inventory of estuarine shoreline conditions found in the eighteen coastal counties of North Carolina.

U.S. Soil Conservation Service, Soil Survey of the Outer Banks, North Carolina, 1977, Part I, ii.

Part I - A quantitative study of the types of soils found on the Outer Banks. The different soils are analyzed in terms of the chemistry, profile, mineral composition and vegetative cover.

Part II - A compilation of soil maps for each of the counties with ocean shoreline on the Outer Banks.

Wahls, H. F., A Survey of North Carolina Beach Erosion by Air Photo Methods, the Center for Marine and Coastal Studies-North Carolina State University, Report No. 73-1.

A detail survey of long term erosion and accretion trends along the ocean shoreline of North Carolina.

## Section 2: MANAGING THE EFFECTS OF EROSION - METHODS, PROCEDURES AND POLICIES

### (a) Nonstructural Control

North Carolina relies primarily on land use management and other nonstructural controls to manage erosion and its effects.

#### Land Use Management.

Land use management is the use of regulatory legislation, permits, zoning ordinances, building codes, etc., to influence people in their use of land along the shore. Research studies show that land use management, overall, provides the best long-term method of controlling erosion and, in terms of cost, the least expensive.

Land use management is a post-World War II phenomenon stemming from disenchantment with traditional structural procedures and from a growing need to resolve intense commercial, industrial, residential, and recreational conflicts for coastal processes.

In the coastal area of North Carolina, nonstructural control of erosion through land use management is achieved.

1. Primarily through the standards and regulations of the Coastal Area Management Act (CAMA)(G.S. 113A-100) and the CAMA permit in Areas of Environmental Concern system (G.S. 113A-118);
2. Through other regulatory programs that deal with the causes and effects of erosion;
3. Through the control of government actions and activities subject to the consistency provisions of the FCZMA and Executive Order #15.

Areas of Environmental Concern. Areas of Environmental Concern (AEC's) represent geographic segments of the coastal zone that have been identified by the CRC as critical resource management areas of greater than local concern.

Using a criteria that has been established in the CAMA (G.S. 113-113(b)), eroding areas have been designated as AEC's by the CRC. The CRC designated as AEC's lands along the Atlantic Ocean and estuarine shoreline where, because of their special vulnerability to erosion or other adverse effects of sand, wind, and water, uncontrolled or incompatible development could unreasonably endanger life or property.

The identified AEC's along the ocean shoreline include: beaches, frontal dunes, inlet lands, and other areas in which geologic, vegetative and soil conditions indicate a substantial possibility of excessive erosion or flood damage. Collectively these AEC's are considered the ocean hazard area.

The following defines each AEC within the ocean hazard area, describes briefly each one's significance and outlines the respective priority of uses. These descriptions, significance statements and priority of uses serve as the policy basis for the regulatory program implemented through CAMA.

### AEC Ocean Beaches

#### Description

Ocean beaches occur along the outer bank. They extend from the Atlantic Ocean landward to a point where either the growth of vegetation or a distinct change in land forms occur.

#### Significance

Ocean beaches in North Carolina represent a dynamic zone of unconsolidated sand that absorbs a great amount of wave energy. Ocean development within this shifting zone may result in a loss of property and possible loss of life. Ocean beaches are also important recreational areas that attract tourists nationwide.

#### Priority of Use

Highest priority shall be allocated to recreational uses that maintain the high quality of the beach while providing access to public beaches. Lowest priority is given to land uses involving the construction of permanent or substantial structures.

### AEC Frontal Dunes

#### Description

Frontal dunes are mounds of sand located directly landward of the coastal beaches. The AEC extends from the ocean beach to the lowest elevation in the depression immediately behind the first dune ridge.

#### Significance

Frontal dunes serve a very important function as a protective barrier to development from storm tides. Development with inadequate design may alter the protective character of the dunes and consequently, subject life and property to a substantial risk.

#### Priority of Use

Highest priority shall be allocated to the preservation of frontal dunes. Lowest priority will be given to development that would involve the removal or relocation of frontal dune sand or vegetation.

## AEC Inlet Lands

### Description

Inlet lands are lands adjacent to inlets having demonstrated a tendency or a probability of migrating along the outer banks. The AEC is defined using the past history of the inlet to predict possible future movements of the inlet.

The AEC-Inlet lands include those lands that have either eroded within the past 25 years or that are predicted to erode in the future. Predictions were calculated through the use of demonstrated erosion rates.

### Significance

The location of an inlet is often a temporary one, such channels often are subject to extensive migration. Coastal inlet lands are therefore extremely dynamic land areas that are highly susceptible to becoming completely displaced by water.

### Priority of Use

Highest priority shall be given to uses that do not involve the construction of substantial structures. Lowest priority will be allocated to major public facilities that promote development.

## AEC - Ocean Erodible Area

### Description

Ocean erodible areas are ocean shoreline areas that have been identified by the State geologist as hazardous to development because of excessive erosion. The ocean erodible area overlays the frontal dune and is described as a distance landward from the toe of the frontal dune. The distances landward used in this description are based on studies of the probable erosion resulting from a storm surge of a 25-year frequency.

### Significance

Ocean Erodible Areas are extremely dynamic lands, highly susceptible to becoming displaced by periodic storm surges.

### Priority of Use

Highest priority shall be allocated to recreational and other non-structural uses. Lowest priority shall be given to structures for commercial or institutional purposes that encourage growth in these hazardous areas.

## Estuarine Shorelines

The CRC, in addition to designating AEC's along the ocean shoreline, recognized and established an AEC along the estuarine shorelines in order to manage the effects of erosion as well as protect the estuarine waters from the effects of shoreline development.

The following defines the Estuarine Shoreline AEC, describes its significance and outlines the priority of use.

### Description

Estuarine shorelines are the fastlands adjacent to estuarine waters extending landward 75 feet from mean high water or normal high water.

### Significance

Development within the estuarine shorelines of AEC's influences the quality of the estuarine system and is subject to the damaging processes of shorefront erosion.

### Priority of Use

Highest priority of use shall be allocated to recreational, rural and conservation activities in those shoreline areas exhibiting a significant erosion rate. High priority shall also be given to water access and shoreline protection, provided that public resources will not be detrimentally affected.

Second priority of land use shall be given to proposals which illustrate a sound understanding of the management principles of this dynamic and susceptible zone.

Lowest priority shall be allocated to major public facilities that would promote growth in areas where a substantial possibility of excessive public expenditures for maintaining the use of the facility may result or the facility would result in a loss of significant private resources. Proposed development that may harm estuarine resources or cause damage to riparian properties will also receive lowest priority.

AEC regulation as a procedure for controlling erosion. The AEC permit is a coercive implementation tool that requires that public and private land uses in AEC areas comply with the standards that have been adopted by the Coastal Resources Commission.

Any activity in an Area of Environmental Concern involving, requiring, or consisting of construction or enlargement of a structure; excavation;

dredging; filling; dumping, removal of clay, silt, sand gravel or minerals; bulkheading, driving of pilings; clearing or alteration of land as an adjunct of construction; alteration or removal of sand dunes; alteration of the shore, bank, or bottom of the Atlantic Ocean, or any sound is considered development and requires a CAMA permit.

Procedures for obtaining a permit. The CAMA permit which is required for any of the activities listed above is administered under the authority of the Coastal Resources Commission. In obtaining a permit, the following procedure is used:

- (1) A developer requests a permit by completing the CAMA application and provides a description of the development.
- (2) If the application is completed properly and all necessary information is included, public notice is given by publication in a local newspaper, posting a copy of the application at the site of, and mailing a project description to any party who has requested it.
- (3) Affected State and Federal agencies are circulated copies of the application for comments and recommendations.
- (4) Based on favorable reviews and no objectionable public comments, a recommended decision on the permit is issued by the Office of Coastal Zone Management and sent to the applicant. If the applicant accepts the decision, it becomes final. If the applicant disagrees with the decision, he has a right to call for a hearing which will be held before the CRC.

#### Advantages of AEC's as a management tool

A major advantage given to North Carolina's Coast Management Program in designating erosion-prone areas as AEC's is its control over the uses of these areas. Another important advantage of the AEC designation is its flexibility since the designated AEC's may be reviewed and both the geographic extent as well as the permit standards altered if the conditions upon which the original designation were based have changed.

#### Other State regulatory programs

The following State agencies have been identified as also playing major roles in managing the adverse effects of erosion along the estuarine and ocean shorelines. A description of each agency, its regulation authority and how it will be used in the management program will be described below.

## Division of Marine Fisheries Dredge and Fill Law (G.S. 113-229)

The Division of Marine Fisheries and the Marine Fisheries Commission are responsible for management of the State's marine and estuarine fish and shellfish resources and have the authority to regulate the use of certain estuarine environments that are vital to the successful propagation of these species.

The Division is authorized to administer the State Dredge and Fill Law which requires a permit for dredge and fill activities in estuaries, tidelands, marshlands or State-owned lakes. This includes the Atlantic Ocean to a three-mile limit as well as bays, sounds and rivers seaward of the dividing line between coastal and inland fishing waters.

Permits may be denied if there would be significant adverse effect on the use of water by the public; the value and enjoyment of property of other riparian owners; public health, safety and welfare; conservation of public and private water supplies; wildlife or fresh water, estuarine or marine fisheries. More specifically, as stated in Marine Fisheries (CNRC) administrative code (15 NCAC 3D 0100-.0200) every proposed shoreline erosion control structure must meet the following criteria:

- (1) The necessity for a shore protection project must be demonstrated;
- (2) Bulkhead alignment and revetments must approximate the mean high water level or normal water level;
- (3) Control structures must be constructed inland of the marshland and marshgrass fringe;
- (4) All bulkheads need to be designed to decrease flanking;
- (5) All bulkhead alignment needs to show documentation of pre-erosion condition to exceed landward of MHW or NWL; and
- (6) All fill material must come from an upland source and be adequately confined.

Each shoreline protection structure which exceeds seaward of the high water marks needs a permit and field biologists perform individual site reviews. Later the project's report is sent to several State review agencies having expertise in those matters enumerated in (G.S. 113-229) (e) 1-5).

Department of Administration (DOA) easements to fill in submerged waters (G.S. 146-6 (c)).

The Department of Administration provides services to all departments, commissions, and boards within State government.

DOA has been authorized to grant easements to fill in submerged lands. Specifically, the State Property Office of the Department of Administration (DOA) requires an "easement to fill" permit in all incidences where a person wants to raise lands or shorelines above the normal high water mark by filling (G.S. 143-141 (4); 146-6). As stated in DOA's regulations (15 NCAC 3d.0108) each proposed filling project must meet the following conditions:

- (1) The bulkhead and fill must not exceed 10 feet offshore and must show visible signs of erosion;
- (2) The project must lie immediately in front of property;
- (3) The project cannot impede public enjoyment of beach, obstruct navigation or public access; and
- (4) The project cannot injure the property rights of any adjacent riparian owner.

Sand Dune Protection Law (G.S. 104B-3 to -16).

The Sand Dune Protection Law is State enabling legislation that provides for counties with ocean shorelines to adopt ordinances to protect sand dunes as natural barriers to ocean processes. Each county ordinance requires a permit for alternation or destruction of sand dunes.

The resulting county ordinances vary slightly in the amount of area and degree of protection provided to sand dunes along the ocean shoreline.

Consistency of other government programs with the Coastal Management Program for erosion control and mitigation.

The consistency provisions of the FCZMA (Section 307) establish another important nonstructural management tool for erosion control and mitigation. Through the powers bestowed upon the State's Coastal Management Agency by the Federal Consistency Provisions, the State of North Carolina can ensure that the State's erosion control policies are addressed in direct Federal actions, Federal assistance projects and most importantly in Federal regulatory programs. Likewise, the Governor's Executive Order #15 provides similar assurances that State government actions including regulatory programs will to the maximum extent possible be consistent with coastal management policies.

#### State Policies Pertaining to Erosion - Nonstructural

Presently, the North Carolina Coastal Management Program Plan describes 6 general policies concerning the control of erosion. These policies are:

- (1) That hazard areas not be used in ways that cause unreasonable risk to life or property. As set forth by the Land Policy Council under authority of the Land Policy Act (G.S. 113A-150).
- (2) To help control and minimize the extent of floods by preventing obstructions which inhibit water flow and increase flood heights and damage by assisting local governments in designating floodways in which artificial obstructions may be placed only according to strict regulations. As set forth and implemented under the Authority of State Floodway Regulation (G.S. 143-215.51).
- (3) To encourage the establishment of parks and other open spaces in flood prone areas. As set forth and implemented under authority of G.S. 113-34 acquisition and control of State forest and parks.
- (4) To adopt erosion and sedimentation standards which will permit development of this State to continue with the least detrimental effects from pollution by sedimentation. As set forth and implemented under the authority of the Sedimentation Pollution Control Act (G.S. 113A-50).
- (5) To control the location and design of structures and to prevent damage to natural protective features in ocean hazard areas (which include beaches, frontal dunes, inlet lands) in order to reduce the loss of life and property. As set forth in the CRC's, "State Guidelines for Areas of Environmental Concern" and implemented under the authority of the CAMA.
- (6) To ensure development along estuarine shorelines is compatible with both the dynamic nature of that shoreline and the natural values of the estuarine system itself. As set forth in the CRC's, "State Guidelines for Areas of Environmental Concern" and implemented under authority of the CAMA.

In addition to the above general policies, the specific standards for hazard areas of environmental concern will serve as the basis for the analysis of consistency for Federal projects (See Appendix A).

The Coastal Management Program will in the future augment the above policy statements through a policy development procedure discussed in Chapter 6 of the North Carolina Coastal Management Program Plan. The CRC has formulated a coastal erosion task force in order to develop these additional policy statements. To date, the task force has formulated preliminary statements of policy that are now being considered (See Appendix B). After consideration by the proper agencies, governmental units and citizens, these policies will be appropriately modified and adopted as a part of The Coastal Management Program Plan and State Guidelines.

## (b) Structural Control

North Carolina relies primarily on nonstructural control measures to manage the long term effects of shoreline erosion. However, structural controls are usually proposed for an area where 1) there is an immediate need for the structure because erosion threatens a heavily populated area and/or 2) major public facilities or resources are endangered by erosion.

Structural controls which have been installed along the shores of North Carolina include: 1) Those which are placed against backshore margins to form barriers against the sea (sea walls revetments and bulkhead), (2) structures designed to reduce wave energy (breakwaters), (3) projects from the land into offshore waters forming barriers to littoral drift (jetties and groins), and (4) beaches which are artificially supplied with sand to increase the size of the beach and to retard the loss of valuable sand caused by littoral drift (beach nourishment projects).

### DESIGNATING AREAS FOR EROSION CONTROL - STRUCTURAL METHOD

The development of a plan for structural protection of lands in North Carolina may be accomplished through cost sharing arrangements between the State and local government for the non-Federal share of Federally funded projects. Emergency small scale erosion control projects may be funded between the State and local government through the State's Public Works Program.

#### Federal Protection Program

Federal Share. The U.S. Army Corps of Engineers carries out most Federal Coastal Protection work on Federal land in North Carolina. On non-Federal lands, the Corps of Engineers will participate with State and local governments in providing structural controls. The Federal share in these projects has been established by Congress.

On non-Federal land, the Federal Government will contribute up to seventy percent for non-Federal public parks or conservation areas that need to be protected from erosion. On other non-Federal public use areas, up to fifty percent will be paid, depending on the proportion of public benefits to be derived from the construction of the project.

Projects in which the government has contributed seventy percent are the beach erosion protective works constructed for Fort Fisher and Fort Macon State Parks.

Non-Federal Share. The non-Federal share for structural controls on non-Federal lands in North Carolina may be shared between the State and the local government. The State share is limited to a maximum of eighty percent and the remaining twenty percent has to be paid by the local government. If the project is not sponsored by a local unit of government and the State owns or has legal possession and control of the area adjacent to the location of the proposed project and in the opinion of the State, the project would be beneficial, then the State could handle the entire non-Federal share.

The Corps of Engineers (who are responsible for constructing Federally funded projects) requires that the sponsoring local agency assures their commitment by signing the Corps 221 Contract.

When the local government is sponsoring the project, the local government makes this assurance and signs the Corps 221 Contract.

The State agency responsible for determining whether the State will participate in a cost sharing arrangement with local governments (to pay the non-Federal share of Federally funded projects) is the Department of Natural Resources and Community Development (DNRCD).

The DNRCD will consider State participation in a proposed permanent or temporary project to provide beach erosion control and/or hurricane protection, provided the appropriate local government request State participation and agree to sponsor the project and to meet all applicable State and Federal requirements for local cooperation.

#### Procedures for State Participation in a Federally Funded Structural Control Program

Structural projects which require substantial Federal funding, usually originate when concerned local groups request Federal and State assistance to combat shoreline erosion problem. Assistance is requested from the District Corps of Engineers and the DNRCD.

If, after going through Congressional channels, the project receives approval, a request is made by the Corps to the Department or local government to assure that all non-Federal contributions will be met.

Before a letter of assurance from the State or local government is issued, comments and recommendations from all affected State agencies are required. Further, the project has to be reviewed by the Secretary of the Department of Natural Resources and Community Development.

The final step is the issuing of a letter of assurance to the Corps of Engineers that the non-Federal share will be paid.

### Local Government Share in Federally Sponsored Structural Control Projects

To aid local governments in providing for their share of Federally funded projects, the State of North Carolina has set up a special fund to be used by local governments.

General Statute 143-215-62 creates a Hurricane Flood Protection and Beach Erosion Control Project Revolving fund. This fund contributes to hurricane protection, beach erosion control projects, advance planning, etc.

The responsibility for administering this fund has been delegated to the Secretary of the Department of Natural Resources and Community Development.

(Note: This State Act and Fund have never been used.)

### North Carolina Public Works Projects

The funding of structural controls for which there may be no Federal funds available, or if, in the opinion of the DNRCD, the Federal funds available are insufficient, can be done through the State's public works project funds.

Pursuant to Chapter 684 of the 1963 North Carolina General Assembly Session Laws, an amount of one million dollars was appropriated for the purposes of building sand dunes and other public works projects. Certain portions of the appropriation may be used for the purpose of defraying the costs of planning construction or operation of any civil works projects in which the State participates in a cost sharing arrangement with the Federal Government or in which the State participates in cost sharing arrangements with local government when Federal funds are not available or are insufficient.

Additional appropriations are made by the North Carolina General Assembly - for public works projects each biennium.

### State-Local Cost Sharing Arrangements and Requirements

The cost sharing arrangements between the State and local government is determined in accordance with the State cost sharing policy for beach protection projects. On State-owned land and facilities, the entire cost is paid by the State, on privately-owned beaches with provision for public access, the State may pay any portion up to eighty percent and the local government is required to pay twenty percent. The State will not fund projects for beach protection on privately-owned beaches without provision for public access.

State participation in proposed public works projects in which the State will provide a significant contribution is made in accordance with the following State requirements.

1) Economic justification is required. It is not intended that the program shall simply make possible projects which the Federal Government has found unworthy.

2) Formal approval required. It must have the formal approval of the governing bodies of all affected counties or municipalities.

3) Sound Engineering Required.

The project must be soundly engineered by the local government making the request prior to submission to the Department for approval.

4) Compatible with North Carolina Water Plan.

The North Carolina Water Plan is the State plan to manage its water resources both for the present and the future. All projects are required to be in line with the State guidelines.

5) Approval of All Affected State Agencies.

It should have the approval of all affected State agencies, normally those administering the Fish and Wildlife, State Lands, Ports, Highways, Recreation and Health.

#### Procedures for State Participation in Public Works Projects

Structural projects which require substantial State contribution originate when a local government requests assistance from the Department to provide cost sharing funds to combat shoreline erosion problems.

Before any action is taken, the DNRCD requires that all studies to determine the feasibility of the project and the best structural solution for the proposed area be completed prior to the request for assistance.

The Department review requires that all affected State agencies are notified and comments and recommendations are requested.

In light of the State agencies' comments and recommendation and the State funding requirements, a decision is made by the Department.

If the decision is favorable, the DNRCD draws up the cost-sharing arrangements for the projects and requires that the local sponsoring government institute land use controls which will be used to manage any adverse impact of the project.

### State Policies Pertaining to Erosion-Structural Controls

The Department of Natural Resources and Community Development will not approve State participation in any beach erosion control or hurricane protection project when the Department finds that:

- (1) The project is not physically feasible or not economically justified; or
- (2) The project is in an area that is not significantly developed, or in an area that is essentially in its natural state or condition.
- (3) The project is in an area that is highly susceptible to damage from beach erosion or inlet migration and, in the opinion, this high susceptibility to damage was commonly known when the development works to be protected by the project were constructed.

Presently, erosion control policies are being reviewed by the CRC and the Secretary of DNRC and modification and expansion is expected. These policies will be incorporated in the State management plan.

## A. General Shoreline Erosion Policies

### Declaration:

It is hereby declared that the general welfare and public interest require that development along the ocean and estuarine shorelines be conducted in a manner that avoids loss of life, property and amenities. It is also declared that protection of the recreational use of the shorelines of the State is in the public interest. In order to accomplish these public purposes, the planning of future land uses, reasonable regulations and public expenditures should be created or accomplished in a coordinated manner so as to minimize the likelihood of damage to private and public resources resulting from recognized coastal hazards. To that end the following will be specific policies of the State of North Carolina.

### It is State policy that:

- I. Pursuant to Section 5, Article 14 of the North Carolina Constitution, proposals for shoreline erosion control projects shall avoid losses to North Carolina's natural heritage. All means should be taken to identify and develop control measures that will not adversely affect estuarine and marine productivity.
- II. Nonstructural measures designed to minimize the loss of private and public resources to erosion are preferred solutions to erosion problems provided such measures are economically, socially, or environmentally justified. Preferred nonstructural control measures for shoreline erosion shall include but not be limited to AEC regulation, land use planning and land classification, establishment of building setback lines, subdivision regulations and management of vegetation. When structural controls are selected in developing alternative plans for erosion control a clear rationale should be presented and those structural control measures which have the least effect on natural processes should be given prime consideration. (Note: For the purpose of this policy beach nourishment projects are included with traditional structural control measures such as revetments. The reason for this is that beach nourishment projects are land disturbing activities that can drastically alter the estuary (as a borrow area), the barrier island (through which pipelines will be laid) and the beach and nearshore (through the replacement of aquatic bottoms with dry sand).
- III. The State of North Carolina will encourage innovative institutional programs and scientific research that will provide for effective management of coastal shorelines.

- IV. The planning, development, and implementation of erosion control projects will be coordinated with appropriate planning agencies, affected governments and the interested public. Maximum efforts will be made by the State to accommodate the interest of each interested party consistent with the project's objectives.
- V. The State will promote education of the public on the dynamic nature of the coastal zone and on effective measures to cope with our ever-changing shorelines.

## B. Proposed Revisions or Additions to AEC Standards

### I. Estuarine Shorelines

- a. Shoreline erosion projects should not be constructed in beach or estuarine areas that sustain substantial habitat for important wildlife species unless adequate mitigation measures are incorporated into project design. Both the level of adverse effect and determination of what measures are appropriate and necessary to lessen environmental costs will be determined by those agencies responsible for protection and management of affected resources.
- b. Project construction should be accomplished during periods of least significant biological activity. See Title 15 Subchapter 3D, Section .0109(a) of the North Carolina Administrative Procedures Act, the Dredge and Fill Regulations 15NCAC 3D .0109(a-), as implemented under authority of the Dredge and Fill Act (G.S. 113-229).
- c. The project should be located so as not to adversely impact upon a primary nursery area. 15 NCAC 3D .0109 and G.S. 113-229.
- d. Projects should be designed so as not to create stagnant water bodies. 15 NCAC 3D .0109 and G.S. 113-229.
- e. Materials must not be excavated from highly productive tidelands, bottoms and marshlands for the sole purpose of obtaining fill. 15 NCAC 3D. 0109 and G.S. 113-229.
- f. Materials dredged from both private and public navigation projects should receive prime consideration for disposal on the beach and estuarine shorelines as long as the material has suitable physical and chemical characteristics.

- g. Group or community bulkhead projects along estuarine shorelines will be acceptable only where lots are of sufficient size to meet all septic tank regulations of where sewer service is available at the time of application.
- h. Bulkheads should be constructed inland of marshland and marshgrass fringes. 15 NCAC 3D .0109 and G.S. 113-229.
- i. Bulkhead fill material should be obtained from up-land source. If the bulkhead is a part of a project involving excavation, the material so obtained may be used as back-fill. 15 NCAC 3D .0109 and G.S. 113-229.
- j. Shoreline erosion control projects shall not violate any applicable law or regulation of the State of North Carolina and will be consistent with AEC standards and local land use plans and other State policies.
- k. For an estuarine shoreline erosion control project affecting more than 500 linear feet of shoreline, the project shall be reviewed and found acceptable by a registered professional engineer with recognized coastal experience, or by an authorized agent of the U.S. Soil Conservation Service, the U.S. Army Corps of Engineers or the North Carolina Coastal Resources Commission.

## II. Ocean Hazard Areas

- a. Shoreline erosion projects should not be constructed in beach or estuarine areas that sustain substantial habitat for important wildlife species unless adequate mitigation measures are incorporated into project design. Both the level of adverse effect and determination of what measures are appropriate and necessary to lessen environmental costs will be determined by those agencies responsible for protection and management of affected resources.
- b. Project construction should be accomplished during periods of least significant biological activity. See Title 15 Subchapter 3D, Section .0109(a) of the North Carolina Administrative Procedures Act, the Dredge and Fill Regulations (15 NCAC 3D .01099 (a)), as implemented under authority of the Dredge and Fill Act (G.S. 113-229).
- c. The project should be located so as not to adversely impact upon a primary nursery area. 15 NCAC 3D .0109 and G.S. 113-229.

- d. Projects should be designed so as not to create stagnant water bodies. 15 NCAC 3D .0109 and G.S. 113-229.
- e. Materials must not be excavated from highly productive tidelands, bottoms and marshlands for the sole purpose of obtaining fill. 15 NCAC 3D .0109 and G.S. 113-229.
- f. On those ocean front lots which have no frontal dune formations, new constructions must be located at least ten times the long term annual erosion rate back from the dune line as defined in the North Carolina Water Plan, Chapter 10.
- g. No development will be allowed on those lots which lack locally established minimum lot sizes due to shoreline erosion.
- h. Inlet hazard areas as identified by past erosion and migration trends illustrate enough risks to life and property (CAMA G.S. 113A-120 (6)) that new subdivision of land within inlet AEC's should not be approved by local governing boards.
- i. In order to avoid weakening the protective nature of frontal dunes, no development will be permitted which would involve the permanent removal, relocation or modification, of frontal dune sand or frontal dune vegetation. 15 NCAC 7H .0306.
- j. Individual property owners may obtain AEC permits to protect their existing structures along the ocean front if it is determined that the structure is threatened. A threatened structure is one that was built prior to March 1, 1978, and where the apparent erosion rate is such that the structure's foundation is imminently endangered. Normally, the structure's foundation will be considered endangered if the foundation is less than 20 feet away from the toe of the dune or erosion scarp.
- k. The State will require that all structural erosion control projects demonstrate sound engineering for ocean shoreline erosion control projects. This will require that any project be reviewed and approved by a registered engineer with recognized coastal experience.
- l. Preferred structural control measures to combat ocean front erosion shall be beach nourishment projects and offshore sill or offshore breakwaters when these are found to be the most effective control structures for a given site.

- m. The use of seawalls and bulkheads to combat ocean front erosion is an unacceptable structural control measure, except in special cases, because these are a threat to the public beaches through acceleration of erosion caused by steepening the beach offshore profiles from wave reflections off the walls.
- n. Materials dredged from both private and public navigation projects should receive prime consideration for disposal on the beach and estuarine shorelines as long as the material has suitable physical and chemical characteristics.
- o. The bulldozing of the berm (that area between mean high water and where either vegetation begins or a distinct change in slope occurs) to create or augment the dune system will only be allowed where properties are threatened in the sense of Standard 10, above.
- p. Dune areas outside of AEC's shall not be used as sources fill material for low areas within the ocean hazard area. All fill material should come from other than dune sources. Note: This standard would require a redefinition of dunes to be protected.
- q. Shoreline erosion control projects shall not violate any applicable law or regulation of the State of North Carolina and will be consistent with AEC standards and local land use plans and other State policies.

#### C. Directives to Staff

- I. Research will be done on the use of revetment and riprap materials to stabilize shorelines that benefit marine organisms.
- II. The State will encourage continued research on the effectiveness of planting natural vegetation to combat shoreline erosion and/or the determination of projects that could use natural vegetation for shore erosion control.
- III. The CRC will encourage the State Sea Grant Program and State and Federal permit agencies to allow and assist private individuals to use breakwater devices, offshore sills, and revetments in order to collect more data as to their effectiveness in reducing erosion.
- IV. The CRC will coordinate AEC requirements and the subdivision of large tracts of land with HUD's "Interstate Land Sales Act" requirements to the fullest extent possible.

- V. The CRC will coordinate the implementation of the coastal management program with requirements of the National Flood Insurance Program. The following suggestions will help in more efficient enforcement of both programs and aid in accomplishing common objectives: (A) FIA needs to move as expeditiously as possible to complete flood insurance studies and to establish flood insurance rate maps; (B) AEC standards, FIA construction requirements, and actuarial rates need to be combined and/or coordinated to better manage State/Federal identified risks; (C) A "No Insurance Zone" should be established within inlet and ocean hazard areas AEC's; (D) The FIA substantial improvement percentage which allows exemptions from construction standards should be less than 50% of the structure's fair market value because it allows unsafe improvements which may double the existing size of the structure.
- VI. The CRC endorses the intent of proposed Chapter #33 on piers, bulkheads, and waterway structures in the N.C. State Building Code.
- VII. The CRC recommends that the State Property Office (Department of Administration) issue easements to fill for land reclamation projects where applicants can provide adequate documentation (aerial photos, remaining piers, dolphins, etc.) that their estuarine shorelines have eroded within the year prior to permit application.
- VIII. The CRC along with Sea Grant assistance will work toward co-authoring a handbook on estuarine erosion control structures which illustrates typical design features, success and failures of different erosion control methods, and average costs involved.
- IX. The CRC will sponsor shoreline erosion/mitigation planning workshops for all interested persons seeking methods, answers, and alternatives management approaches on how to live with and/or combat shoreline erosion. The proceedings from these workshops will be disseminated to the public to create an awareness of the problem.

### Section 3: Identification of Legal Authorities North Carolina Coastal Area Management Act

#### (1) Coastal Area Management Act

General Statute 113A-100 provides for a management scheme to preserve coastal ecological conditions, insure sound land and water resources use, and maintain an orderly development of the areas' resources.

A Coastal Resources Commission is created and is primarily responsible for implementation and enforcement.

#### (2) Areas of Environmental Concern

General Statute 113A-113 permits the Coastal Resources Commission to designate natural hazard areas as areas of environmental concern.

#### (3) Guidelines for areas of environmental concerns

General Statute 113A-107 (a) gives the Coastal Resources Commission authority to adopt guidelines for areas of environmental concern.

#### (4) Activities that are controlled by AEC regulations.

G.S. 113A-103 (5) states what activities are subject to the provisions of the AEC regulations.

#### (5) Altering AEC designation

General Statute 113-115 (c) gives the Coastal Resources Commission authority to alter AEC designation if necessary.

#### (6) Permit required for designated areas of environmental concern

General Statute 113A-118 gives the Coastal Resources Commission authority to require a permit for any development (as defined under G.S. 113-013 (5)) in an area of environmental concern.

### Other Legal Authorities

#### (1) Department of Natural Resources and Community Development Dredge and Fill Law

General Statute 113-229 requires that any person, firm, corporation or agency intending to perform excavation and/or fill work in any estuarine waters, marshland, tidelands, or State-owned lake must obtain a permit from the State of North Carolina.

### Department of Administration

#### (2) Easement to fill in submerged land

General Statute 146-6 (c) requires an easement of any person intending or proposing to raise lands above the normal high water mark of navigable waters by filling.

#### (3) Protection of sand dunes along the Outer Banks

General Statute 104B-3 to -16 makes it unlawful, with certain exception, for any person, firm or corporation to damage, destroy or remove any sand dune lying along the Outer Banks.

#### (4) Federal permits for dredge or fill material

Section 404 of the Federal Water Pollution Control Act (92-500) requires a permit for the discharge of dredged or fill material in all navigable waters of the United States including coastal waters.

#### (5) Federal permits for construction on navigable waters

Section 10 of the River and Harbor Act of 1899 requires a permit for any construction in or around navigable waters of the United States.

### Technical Assistance and Review Programs

The following agencies and programs provide technical assistance on problems pertaining to shoreline erosion. Their services are available to property owners, land developers, local government agencies and others who are interested.

Their services will be solicited and use by the Coastal Management Program in its efforts to manage the effects of shoreline erosion.

U.S. Soil Conservation Service - SCS works primarily with the soil and water conservation districts towards minimizing erosion of inland shorelines of North Carolina. Their objectives are:

1. To investigate and determine the expediency of using relatively inexpensive materials in shore protection in an effort to reduce the high costs which prevent the majority of shore front owners from protecting their property from erosion.

2. To provide technical assistance for the design and installation of simple erosion control devices that will help protect the property on which they are to be constructed without causing adverse effects to the adjacent property.

NOAA Sea Grant - Sea Grant is a State-Federal partnership design to promote the wise use and development of the Nation's coast and oceans through research, extension and education. The U.S. Department of Commerce's National Oceanic and Atmospheric Administration provides two-thirds of program support while the N.C. Department of Administration through its Office of Marine Affairs provides matching dollars on a one-to-two basis.

Services available from Sea Grant include:

1. Extension and education workshops and publications to inform property owners and government (both local and State) about erosion and measures to control erosion.
2. Research studies on significant coastal problems, in particular, shoreline erosion surveys, erosion rates and nonstructural means of controlling or managing the impact of erosion.

Federal Insurance Administration (FIA) - FIA encourages and assists coastal municipalities to adopt land use controls in order to purchase Federally subsidized flood insurance. Their zoning regulations and restriction requirements for designated high velocity zones will play a major role in managing hazardous construction along eroding shorelines.

U.S. Army Corps of Engineers - The Corps of Engineers in addition to their Federally funded beach erosion control studies, coordinates Federal permit review procedures in North Carolina.

The regularly bi-monthly permit conference between the Corps of Engineers and State agencies with regulatory permits in the Coastal Zone will provide the Coastal Management Program with an opportunity to:

- (1) Review applications for Federal permits.
- (2) Review and discuss significant research studies pertaining to erosion that have been undertaken or proposed by the Corps or other State agency.

#### Funding Program

##### Department of Natural Resources and Community Development

The Department is headed by the Secretary of Natural Resources and Community Development. As provided by G.S. 143-10(a), the Secretary may assign or reassign any function vested in him or in his department to any subordinate officer or employee of his department.

The Office of Public Works in the Department has been assigned the administrative responsibilities pertaining to State participation in Federally funded beach erosion control projects, and State and local cooperation in Public Works Projects.

More specifically, the Office of Public Works has the following purposes:

1. To manage the State's participation in water resources development projects of the U.S. Army Corps of Engineers and the U.S. Soil Conservation Service for water supply, flood control, navigation, agricultural drainage, and recreation. Expenditures for these programs are in the range of \$50 million per year. Activities for this purpose include the coordination of the State's review of projects, joint project planning with the Federal agencies, and budgeting and managing funds for the State share of project cost.
2. To manage the State-local water resources development program through which small-scale projects are carried out in cooperation with local governments without Federal assistance. Projects under this program have been primarily for navigation and beach protection. Activities carried out by the State staff are planning assistance, review of project proposals, management of State funds and the inspection of completed projects.

## Appendix A

## AEC Standards - Ocean Hazard Areas

The most specific and enforceable coastal policies pertaining to erosion are the standards for development in AEC-Ocean Hazard Areas. These standards are listed below:

(a) In order to avoid unreasonable danger to life and property, the construction or placement of structures to be used for residential, institutional, or commercial purposes will be permitted only landward of the frontal dune.

(b) In order to avoid excessive public expenditures for maintaining public safety, no construction or placement of major public facilities to be supported by State funds will be permitted in hazard areas.

(c) In order to avoid weakening the protective nature of frontal dunes, no development will be permitted which would involve the removal or relocation of frontal dune sand or frontal dune vegetation.

(d) Any residential building erected within an ocean erodible area is required to be in compliance with the piling requirements of the North Carolina uniform residential building code. All other construction in ocean hazard areas must comply with the State building code or more stringent local building codes.

## Exceptions

(a) Development which does not involve the placement or construction of major State-supported facilities or of structures to be used for residential, institutional, industrial or commercial purposes may be permitted in hazard areas if it can be demonstrated that development will not (1) reduce or cause to be reduced the amount of sand held in storage in beaches and frontal dunes; (2) cause accelerated erosion along the shore; or (3) otherwise increase the risk of loss or damage presented to life or property.

(b) The construction or placement of a structure to be used for residential, institutional, or commercial purposes may be permitted on the frontal dune if it can be demonstrated that the size or location of an existing lot would not otherwise allow any practical use to be made of it. In such a case, written acknowledgment of the lot's location in a hazard area and of the State's policy concerning public expenditures in hazard areas will be required of the property owner, as well as compliance with relevant provisions of the North Carolina Building Code.

## AEC Standards - Estuarine Shorelines

- (1) Suitable land uses shall be those consistent with the management objectives.
- (2) Highest priority of land use allocation shall be given to recreational, rural, and conservational activities in those shoreline areas exhibiting a significant erosion rate. High priority shall be given to water access and shoreline protection proposals, provided that public resources will not be detrimentally affected.
- (3) Second priority of land use allocation shall be given to proposals which illustrate a sound understanding of the management principles of this dynamic and susceptible zone. The applicant must demonstrate, in cases where the shoreline is to be altered, that notification of the proposed activity has been given to adjacent riparian land owners.
- (4) All allowable construction activities shall require the applicant's written acknowledgement that there may be associated risks with building on the particular location.
- (5) In order to give proper guidance to the applicant, the most up-to-date information concerning shoreline erosion rates and potentials for flooding shall be given, accompanied by recommended shoreline stabilization and flood-proofing techniques.
- (6) Proposals must not conflict with the purposes and goals of officially adopted State, regional, or local land use plans and regulations.
- (7) Proposed land uses should not significantly harm estuarine resources (both biological and physical) or cause damage to adjacent riparian properties.
- (8) Major public facilities that guide growth and land use patterns which may include, but are not limited to, road, water lines, and sewers, will not be permitted within this category of AEC if their placement would result in a substantial possibility of excessive public expenditures for maintaining public safety and continued use of the facilities.
- (9) All construction within the 75-foot estuarine shoreline zone shall be in compliance with all relevant provisions of local and State building codes.
- (10) All construction within the 75-foot estuarine shoreline zone shall be in compliance with the mandatory standards of the North Carolina Sedimentation Pollution Control Act of 1973 (G.S. 113A-57).

## Appendix B - Task Force Statements

North Carolina's Coastal Management Plan describes a policy development process that will be used to formulate future policies for incorporation into the Management Plan. The procedure will involve: first, the identification of important coastal issues; second, the gathering of the information necessary to understand the issues, and finally, the implementation of the stated policies. The procedure in detail includes the following steps: (1) The staff of the Office of Coastal Management (DNRCM) consults with the Secretary of the Department of Natural Resources and Community Development as well as other State agencies to identify the most urgent needs for State coastal policy; (2) Staff presents recommendations to the Coastal Resources Commission. The Commission designates the areas for study and appoints a "Policy Task Force" consisting of three Commission members and three Advisory Council members to work on the subject under study; (3) Specialists from appropriate State, local and Federal agencies are brought together to serve the Task Force in understanding the programs, services, policies and capabilities of government in addressing the problem; (4) These specialists would assess the needs; educate the Task Force, and make recommendations to the Task Force for policies and guidelines for the coastal area; (5) The Task Force makes recommendations to the Commission on the proposed policies and upon adoption, holds a public hearing; (6) Correspondingly, the DNRCM may choose to incorporate these same policies as written as amendments to the State's Coastal Management Plan or modify or expand the policies as it deems necessary; (7) Inclusion of specific policies in the State management plan and in the "Guidelines" will serve as criteria in guiding State and Federal actions through consistency determination in the implementation phase; (8) Local governments will be required to address the new elements in the "Guidelines" in their next revision of their local land use plans; (9) The local plans reflecting the local desires and situation relative to the new planning element will serve as one of the criteria for consistency determination for State actions; (10) The Task Force is dissolved and the process is repeated as needed.

The following shoreline erosion policies have been looked at as being policies that should be considered by the Task Force. These proposed policies will require extensive modification, and comments and recommendations will be solicited from different State agencies before they are given to the CRC for their consideration.

Ocean Shoreline

(1) The CRC endorses nonstructural control measures for erosion control by protecting the public from identified hazards through AEC regulation, land use planning and land classification, establishment of building setback lines and through subdivision regulations.

(2) The CRC does not endorse the use of seawalls to combat oceanfront erosion except in special cases, because these are a threat to the public beaches through acceleration of erosion caused by steepening the beach/offshore profiles from wave reflection off the walls.

(3) The CRC endorses those structural control measures such as sand-bag groins, beach nourishment projects and offshore sills or breakwaters when these are found to be the most effective control structures for a given site.

(4) All civil works projects prior to being submitted as a line item for design funding must be approved by the CRC and be consistent with AEC standards and local land use plans.

(5) The Coastal Resources Commission as a matter of policy refinement will sponsor shoreline erosion/mitigation planning workshops for all interested persons seeking methods, answers, and alternative management approaches on how to live with and/or combat shoreline erosion. The day sessions will discuss benefits, costs, suitabilities and legal liabilities of certain types of structural and nonstructural controls. Major speakers will include Sea Grant and university experts, local government officials, planners and building inspectors, CAMA and Marine Fisheries staff, and the Corps of Engineers. The CRC wishes to publish the proceedings from these erosion planning workshops in order to disseminate this information out to the public to create an awareness of the problem.

(6) The CRC wants to encourage the civil works staff of DNRCD to work closely with the Corps of Engineers staff to coordinate the evaluation of both navigation and inlet stabilization-beach nourishment needs in order that both objectives can benefit from the same dredging and filling operation. The opportunity to use the dredged material for beach stabilization should not be missed and the task force wants to encourage the civil works committees to broaden planning objectives and to evaluate each project as to its multiple uses.

(7) The CRC has established a need for the State civil works budget to become flexible enough to purchase beach access and public recreation areas adjacent to these projects and contingent upon State funds being available.

(8) The CRC wants to encourage towns to identify special assessment benefit zones, within each town, which would be based on project financing scenarios set out in G.S. 160A-238 for Federally programmed erosion control projects. Such factors as the distance from eroding shorelines, elevation of the land, the distance from the project and CAMA land classification schemes could be utilized.

(9) The CRC requests the general assembly to pass legislation to require developers and subdividers to make a full disclosure statement on each new parcel that is advertised for sale in this state that there are certain land use restrictions which may govern its usability.

(10) The CRC will strive to coordinate AEC requirements and the subdivision of large tracts of land with HUD's "Interstate Land Sales Act" requirements to the fullest extent possible.

(11) The CRC wants to coordinate the implementation of the coastal management program with requirements of the Federal Flood Insurance Program. The following suggestions will help in more efficient enforcement of both programs and aid in accomplishing common objectives: (a) FIA needs to move as expeditiously as possible to complete flood insurance studies and to establish flood insurance rate maps; (b) AEC standards, FIA construction requirements, and actual rates need to be combined and/or coordinated to better manage State/Federal identified risks; (c) A "No Insurance Zone" should be established within inlet AECs and in those instances where exceptions to ocean hazard areas are given; (d) The FIA substantial improvements percentage which allows exemptions from construction standards should be less than 50% of the structure's fair market value because it allows unsafe improvements which may double the existing size of the structure.

(12) The CRC feels that inlet hazard areas as identified by past erosion and mitigation trends illustrate enough risks to life and property (CAMA G.S. 113A160 (6)) that new subdivisions of land within inlet AECs should not be approved by local governing boards.

#### Estuarine Shorelines

(13) The CRC along with Sea Grant assistance should co-author a handbook on estuarine erosion control structures which illustrate typical design features, success and failures of different erosion control methods, and average costs involved.

(14) The CRC wants to encourage the study of and use of bulkhead and riprap materials of proper design to stabilize shorelines that benefit marine organisms by increasing habitat surface area.

(15) Group bulkhead projects will be encouraged by the CRC where lots are of sufficient size to meet all septic tank regulations or where sewer service is available at time of application.

(16) The CRC wants the State Sea-Grant program and State/Federal permit agencies to allow and assist private individuals to use breakwater devices, offshore sills, gabions, and sand-grabbers in order to collect more data as to their effectiveness to stifle erosion.

(17) The State either encourages local nurseries, through monetary assistance, to grow various bank and dune stabilizing vegetation or the State should operate its own nursery to have plenty of these shoreline stabilizing plant species on hand in order to meet revegetation conditions on AEC permits.

(18) The CRC will not issue AEC permits for development on those lots which lack locally established minimum lot sizes due to shoreline erosion.

STATE PROCEDURES  
-FOR  
FEDERALLY FUNDED BEACH EROSION CONTROL PROJECT

Development of a Shoreline  
Erosion Problem

DNRCD

Local Agency Request State  
and Federal Assistance

CONGRESS

Forward Local  
Application to All Affected  
State Agencies and Receives  
Comments

Corps of Engineers  
Prepared Feasibility  
Study

DNRCD Reviews Application,  
Comments and State Funding  
Requirements--Approves, Rejects,  
or Approves with Conditions

Congress Appropriates  
Federal Share

DNRCD Makes Budget Request  
for State Share

General Assembly Appropriates  
Funds

Corps and Sponsoring  
Agency Sign 221 Contract-  
Conditions of Local  
Cooperation are Specified

Local and State  
Government Pay Non-Federal Share

Corps Constructs Project

STATE PROCEDURES  
FOR  
PUBLIC WORKS PROJECT

Development of a Shoreline  
Erosion Problem

Local Agency Request State  
Assistance & Applies for Dredge and  
Fill Permit-Permit Applications Circulated

DNRCD Evaluates State  
Funding Requirements  
Which Are As Follows:

- 1) Construction Feasibility and Environmental Impact;
- 2) Economic Justification and Public Benefits;
- 3) Local Government's Land Use Controls and Establishment of Building Line;
- 4) Public Access to Protect;
- 5) Sites Prior Erosion History;
- 6) Compatibility with North Carolina Approved Water Plan;

Application is Rejected, Approved  
or Approved with Conditions

Local Agency Constructs Project

DNRCD Makes Financial  
Assistance Payment If All  
Conditions Are Met

PART III

Draft Environmental Impact Statement

## Chapter I: Description of the Environment Affected

The State of North Carolina has identified a 20 county area as its coastal zone boundary. Although North Carolina's coastal area is delineated by political boundaries, these counties lie in that part of the State considered to be the tidewater region as it is delineated on physiographic and geologic maps. Generally speaking, these counties have elevations less than 40 feet above sea level, drainage is relatively poor, and there are discernible effects of salt water.

Physically, this area is characterized as a zone of gradual transition from land to sea dominated by rivers, estuaries and bays. The entire coastal environment is influenced by and intimately linked to the vast lagoon-estuary areas of North Carolina. In addition, this region is characterized by vast expanses of wetland areas of over 2 million total acres.

North Carolina has 308 total miles of ocean shoreline of which 148 miles are in public ownership. This large percentage of public beach area, primarily associated with the National Seashores, provides the citizens of North Carolina with a great amount of recreational beach area. Access to these public beaches is a problem only from the standpoint that most of the population centers of North Carolina are a great distance away from the National Seashore properties. The Park Service has made adequate provision for access to the beaches within the National Seashore by providing parking lots, roadways, crosswalks and walkways across the dunes. Public access beaches along the 160 miles of the North Carolina coast not yet publicly owned is not as favorable. Some communities have provided for public access, but in many areas, access has never been a problem and no provisions have been made to insure that it will not be a problem in the future. In fact, there are very few areas where access is denied to the public. It is recognized, however, that increased development in and use of the shoreline may cause beach access to become a problem in the future.

The socioeconomic conditions of this defined area are mixed. A large portion of the coastal area is rural with scattered small communities interspersed among several more developed areas with main population concentrations found in the port areas. In 1970, 21% of the families in the coastal area earned an income below the established poverty level. In contrast, residential and second home development in the beach communities has increased significantly even where some ocean front lots are reported to sell for over \$700/per front foot.

The ocean shoreline consists of an emergent ridge of barrier islands separated by 22 tidal inlets which provide passageways to the mainland. Separated from the mainland by shallow sounds in the North and by the Atlantic Intra Coastal Waterway in the South, this shoreline is approximately 308 miles

in length and has a sandy beach fronting the entire length of the shoreline. The mainland shoreline is classified as a submerged coast line. Consisting of varying mixtures of sand, silt and clay, this area is characterized by its different shoreline types. A discussion of these shoreline types can be found in the North Carolina FEIS.

Overall, erosion seems to be more severe along the ocean shoreline. Erosion rates greater than three feet/year have been reported in some areas. Research studies on the mainland area also indicate that erosion in this area is also quite significant.

From an energy-related standpoint, the coastal area is minimally impacted by energy facilities. Energy facilities that are presently located in this area include: one large electric generating facility and several small scale ones; oil terminal and associated oil storage facilities located in close proximity to the two major port areas; and peat mining activities. In the future, the coastal zone could be called upon to site an electric generating facility, an oil refinery, and LPG terminal, deepwater terminal and possibly some OCS-related facilities. Because needed land and water resources are available, North Carolina's coastal area could be considered as a prime area for future energy facility sites, depending upon regional and national needs.

A fuller discussion of the physical, socioeconomic environment affected can be found in Chapter 4 of the FEIS. Also, a detailed description of the present effect to the environment of energy facilities within the North Carolina coastal zone can be found in the text of the Energy Facility Planning Chapter.

## Chapter II: Probable Impacts of the Proposed Action on the Environment

### A. Shoreline Access and Protection Planning Processes

The beach access issue in North Carolina is broader than simply providing physical access. Other associated aspects to this issue include protection of sand dunes; improvement of transportation corridors both to and within the coastal area, adequate parking and other various local concerns related to the impact of day visitors. The importance and impact of the access issue in light of these other considerations affect all parts of the coast that front public beaches.

The Beach Access and Protection planning element of North Carolina's Coastal Plan represents an effort to develop a planning process that will allow for needed public access to the beach while maintaining the quality of the natural and socioeconomic environment. The process as defined would include use of presently existing regulations, policies and administrative structures discussed in the FEIS in conjunction with the development of new policies and utilization of new authorities as articulated through Objective B.8. Beach Access of the North Carolina State Comprehensive Outdoor Recreation Plan.

The impacts of this planning process can basically be divided into three categories. These categories include: 1) regulation; 2) policy development; 3) and land use planning.

Regulation: The impact of the regulatory program is fully discussed in the FEIS and a discussion will not be reintroduced here. However, the relationship between the regulatory system and the beach access and protection element will be briefly shown. As required, beaches, both ocean and estuarine, have been designated as areas of environmental concern within which development permits are required prior to initiating any land disturbing activities. The standards used to evaluate each permit application preclude essentially all development from the ocean beach and frontal dune. This in effect insures that the public will have free lateral access along the beach. In securing access to the beach the regulations contain two incentives that encourage additional protection of the frontal dunes and encourage public access. This is accomplished through the development standards within areas of environmental concern by allowing the Department of Natural Resources and Community Development or the Coastal Resources Commission to consider provisions for public access as a positive factor in deciding a permit's disposition. The second incentive is the exemption of certain types of structural access ways over frontal dunes from permit requirements. The intent of these regulations is clearly consistent with the planning amendment and should have a positive impact on protecting the frontal dunes and securing additional public access.

Policy Development: The impacts of policy development are fully discussed in the FEIS on pages 271-274. The policies contained in the access and protection plan, however, are new policies and therefore require further clarification. In evaluating these policies the reader must understand that this policy set is not intended to stand alone in the State's efforts to effectively address shorefront access and protection. The policies clearly identify local government as holding the primary responsibility to insuring beach access. Therefore the policy set contained in the planning amendment is intended to complement local efforts. Given this assumption, three policy areas were identified for institution at the State level. The first of these is simply to restate that one intention of developing the planning amendment was to clarify those areas in which the public does hold use rights. The second policy area is intended to serve as a guide for public investment. For example, in order to acquire State and/or Federal funds for beach protection projects insurances must be made that the public will have guaranteed access to the beach. This must include access rights, adequate identification and adequate parking. The third policy area focuses on public lands and requires that all property with shore frontage be used to the maximum extent possible for public access. This does not disregard resource limitations but does point out that there are some areas that could possibly be used more intensely by the public.

Further, the North Carolina State Comprehensive Outdoor Recreation Plan also identifies beach access as a principle policy area. Here, the responsibility for addressing the issue is divided between the North Carolina Office of Coastal Management, and the Division of Parks and Recreation and local governments. By introducing the access issue in the NCSCORP it will insure its priority and immediate attention.

## SHOREFRONT ACCESS POLICIES

Declaration:

It is hereby declared to be the policy of the State of North Carolina to foster, protect, improve and ensure optimum access to recreational opportunities at beach access consistent with public rights, rights of private property owners and the need to protect natural resources from overuse. These policies reflect the position that in areas other than State parks, the responsibility of providing adequate beach access rests primarily with local units of government. Thus, the following policies are intended to supplement and strengthen any local efforts.

Definition:

The term "Beach" as used in these policies is defined as areas extending from the mean low to the mean high water line and beyond this line to where either (a) the growth of vegetation occurs, or (b) a distinct change in slope or elevation occurs, or (c) riparian owners have specifically and legally restricted access above the mean high water line.

This definition is intended to describe those shorefront areas historically used by the public. Whether or not the public has rights in the defined areas above the MHW mark can only be answered by the courts. The public does have clear rights below the MHW mark. The following policies recognize public use rights in the beach areas as defined but do not in any way require private property owners to provide public access to the beach.

## IT IS STATE POLICY THAT:

1. Development shall not interfere with the public's right of access to the shorefront where acquired through public acquisition, dedication, or customary use as established by the courts.
2. The responsibility of insuring that the public can obtain adequate access to public trust resources, or the ocean, sounds, rivers and tributaries is primarily that of local governments to be shared and assisted by State and Federal Government.
3. Public beach area projects funded by the State and Federal Government will not receive initial or additional funds unless provisions are made for adequate public access. This must include access rights, adequate identification and adequate parking.

4. Policies regarding State and Federal properties with shorefront areas intended to be used by the public must encourage, permit and provide public access and adequate parking so as to achieve maximum public use and benefit of these areas consistent with establishing legislation.
5. State and Federal funds for beach access will be provided only to localities that also provide protection of the frontal dunes.
6. The State should continue in its efforts to supplement and improved highway, bridge and ferry access to and within the 20 county coastal area consistent with the approved local land use plans. Further, the State should wherever practical, work to add public fishing catwalks to appropriate highway bridges and should incorporate catwalks in all plans for new construction and for remodeling of bridges. It is the policy of the State to seek repeal of ordinances preventing fishing from bridges except where public safety would be compromised.
7. In order to avoid weakening the protective nature of frontal dunes, no development will be permitted which would involve the removal or relocation of frontal dune sand or frontal dune vegetation. (7NCAC .0306 (c)). The sands held in the frontal dune are recognized as vital for the nourishment and protection of ocean beaches.
8. All land use plans and State actions to provide additional shore front access must recognize the need for providing access to all socioeconomic groups.

## B. Energy Facility Planning Process

The energy facility planning element of North Carolina's Coastal Plan represents an effort to develop a planning process that will allow for needed energy development while maintaining the quality of the natural and socioeconomic environment. The process as defined would include use of presently existing regulations, policies and administrative structures in conjunction with the development of new policies and utilization of new authorities granted under Section 307 of the FCZMA and Executive Order #15 (p. 61 North Carolina FEIS).

The impacts of this planning process can basically be divided into four categories. These categories include: 1) regulation; 2) policy development; 3) land use; and 4) research.

Regulation: As stated in the planning element, the process used to site energy facilities within the State's coastal zone consists of the same basic elements used to site other categories of major facilities--preliminary site analysis, environmental review, and the permit process. As is the case with the total resource management program, the State will rely on regulation to achieve the objectives and policies for energy siting activities. (See Chapter 5, Section 2 of FEIS for a full discussion of means to manage critical uses). These regulatory authorities which affect aspects of the siting process include Section 404 of FWPCA, the State's dredge and fill law, the State water and air quality regulations, the N.C. Public Utilities Act, the oil refinery law, and the CAMA permit program. (Appendix D of the FEIS includes a fuller discussion of these regulations).

In order to assure that the above regulations are applied in a manner that will maintain stated goals and objectives while at the same time allow for needed development, each will be reviewed in accordance with the policies and objectives articulated through the State and local plans. In addition, approval of projects requiring a CAMA permit will be based on development standards for protection. This protection of AECs should have a positive effect on the coastal environment. In the case of other regulations, the cumulative effect of such review should also have an overall positive impact on the coastal resource system and should better coordinate the current laws pertaining to aspects of energy facility siting. The Executive Order will have a significant impact by requiring that State regulatory and management decisions be in accordance with coastal objectives. Implementation and effect of this Executive Order is further discussed in Chapter 6, Section 3 of the FEIS.

Although the impact of consistency will be positively felt in terms of stronger coordination and control of Federal and State permit activities, there is also the chance that such authority can cause delays

in or block entirely an energy project with resultant loss in time and money. These impacts can be avoided, however, through the early consultation phase of the State's planning process.

Policy Development: The policy statements contained in the State management plan, the guidelines and local land use plans constitute the core of objectives to consider in coastal energy facility siting decisions. The process takes these into account in decisionmaking and additional authority is set up in the Coastal Area Management Act to articulate additional policies with regard to the issue. To institutionalize this process, the management plan sets forth a procedure for policy development and refinement (see Chapter 6, Section 1 of the North Carolina FEIS for a description of this process).

Additional policies will be adopted and incorporated into the State coastal plan. These policies, as well as the others already articulated, will form the framework against which consistency with the coastal program is evaluated.

## COASTAL ENERGY POLICIES

## A. General Coastal Energy Policies

Declaration:

It is hereby declared that the general welfare and public interest require that a reliable source of energy be made available to the citizens of North Carolina. It is further declared that the development of energy facilities within the State can serve important regional and national interests. However, unwise development of energy facilities can conflict with the public interest that rests in conserving and protecting the valuable land and water resources of the State, particularly coastal lands and waters. Therefore, in order to balance the public benefits attached to necessary energy development against the need to protect valuable coastal resources, the planning of future land uses and the exercise of regulatory authority should maximize wise energy development and minimize the likelihood of damage to public and private resources. To this end, the following will be specific policies of the State concerning the location of energy facilities within the North Carolina coastal zone.

Definitions:

1. Assessment - An analysis which fully discusses the environmental economic and social consequences of a proposed project. At a minimum, the assessment should include the following information:
  - a. A full discussion of the preferred site for the project and of a reasonable and feasible alternative site(s). If a preferred site is within an AEC or is on a barrier island, at least one alternative not within an AEC on a barrier island must be discussed. Each alternative shall be discussed with essentially the same depth of analysis as the preferred alternative.
  - b. A full discussion of the economic impacts, both positive and negative, of the proposed project and its alternatives. This discussion shall include analysis of any possible adverse impacts upon the ability of any governmental unit to furnish necessary services and facilities.
  - c. Any possible adverse impacts on estuarine and coastal resources.
  - d. Any possible adverse environmental impacts on existing industry or possible unreasonable limitations on the availability of natural resources, particularly water, for future industrial development.

- e. Any possible risk of danger to human life and property.
- f. Other specific data necessary for the various State and Federal agencies and commissions with jurisdiction to evaluate consistency of the proposed project with relevant standards and guidelines.
- g. A specific demonstration that the proposed project is consistent with relevant local land use plans and with guidelines governing land uses in areas of environmental concern.

Note: An EIS prepared under NEPA or an EIA required under existing State regulation will satisfy this definition if all issues listed above are addressed.

2. Major Energy Facility - Those projects which because of their size, magnitude and scope of impacts, have the potential to significantly affect the coastal zone. For purposes of this definition, major energy projects shall include but are not necessarily limited to, the following:
  - a. Any facility capable of refining oil.
  - b. LPG-LNG terminals and associated storage, handling or processing facilities.
  - c. Any oil or gas storage facility that is capable of storing more than 15 million gallons on a single site.
  - d. Electric operating facilities 300mw or greater in size.
  - e. Thermal energy generation facilities.

IT IS STATE POLICY THAT:

1. The placement and operation major energy facilities in the North Carolina coastal zone shall be done in a manner that allows for protection of the environment and with local and regional socio-economic goals. The placement and operation of such facilities shall be consistent with established State standards and regulations and shall comply with local land use plans and with guidelines for land uses in areas of environmental concern.
2. Applications for major energy facilities to be located in North Carolina coastal zone shall, prior to construction, make a full disclosure of all costs and benefits associated with the project. This disclosure shall be prepared at the earliest feasible stage in planning for the project and shall be in the form of an impact assessment.

3. Local governments shall not unreasonably restrict the development of necessary energy facilities, however, they shall be encouraged to develop reasonable measures to accommodate those facilities that are needed and/or desired.
4. In coastal shoreline areas with recognized recreational benefits or with identified access problems, those major energy facilities that do not have technical requirements necessitating shorefront access shall be sited inland of the immediate coastal zone. In other instances when shoreline portions of the coastal zone are necessary or preferred locations, shoreline siting will be acceptable if it can be demonstrated that 1) coastal waters will be adequately protected, and 2) the public's rights to access will not be unreasonably restricted.

B. Directives to Staff:

1. CRC staff will work with affected DNRC and Department of Commerce representatives to formalize a mechanism for impact assessment of major energy projects. Specifically, the drafting of implementing regulations for G.S. 143B-437 (Investigation of Impact of New and Expanding Industry Law) will be pursued. This law calls for intra-departmental cooperation in the evaluation of impacts of new or expanded industry locating within the State. This provision could be implemented to effectively require an environmental impact assessment for a range of major industrial projects, including major energy projects. The main positive aspect of this approach is that such a procedure could be implemented on a statewide rather than a solely regional basis. If no feasible agreement could be reached within a specific time, staff should assess more fully the feasibility of pursuing other options such as AEC revisions or amending the major development permit application to include an assessment for major facilities requiring the CAMA permit.
2. The CRC will encourage local governments to plan for major facilities (including energy facilities). Specifically, staff should consider ways that such interests can be addressed through 1) revisions to the State Guidelines for Local Planning, 2) use of Coastal Energy Impact funds, and 3) helping fund other local initiatives to reasonably guide industrial development.
3. CRC staff, in conjunction with affected agencies, will develop general criteria to guide siting decisions of energy facilities articulated in Section 1 of North Carolina's Energy Facility Planning amendment. These criteria will not attempt to identify sites per se but will be aimed at giving broad guidance on areas in which development will be encouraged or discouraged within the coastal zone.

4. Research will be done on the feasibility of using the Key Facilities AEC category in planning for energy facilities within the coastal zone. Specifically, staff should assess the various ramifications of such designation and present alternatives on how to most effectively use the category.

The impact of this development and implementation of State coastal energy policies should have an overall positive impact in that applicants for permits will have a clear statement of criteria in reference to project siting. It is also anticipated that this statement of policies should enable the State to more quickly evaluate the merits of a project, thus helping to avoid unnecessary delays due to misunderstanding of State intent.

Policy development could be viewed as causing unnecessary restrictions or additional red tape; however, the process of policy development attempts to accommodate and include all affected interests, therefore resultant coastal energy policy statements should be incorporated only after concurrence that they are both acceptable and needed.

Land Use: With future demands for coastal energy sites expected to increase, some form of governing controls will be needed to assure that ultimate site location is appropriate. The planning process will rely on the specific land use control techniques articulated in CAMA pertaining to control of critical areas through AEC designation and the development of land use plans on a regional basis to guide energy facility location. (Chapter 5, Section 1 of the North Carolina FEIS defines these critical areas and their importance and Chapter 3, Section 2 of the North Carolina FEIS describes the land use planning phase). Utilization and refinement of these techniques should clarify areas where energy facilities will be encouraged or discouraged in the future. Guiding inappropriate facilities away from critical areas will be accomplished through a combination of the CAMA permit program and local land use plan utilization. However, the planning process will also identify criteria by which local governments can broadly define areas for industrial development (such as energy facilities). Planning grants will be made available to local planning agencies to accomplish the task.

The overall impact to land use decisions should be a positive one in that: 1) local government will be able to more clearly define areas suitable for industrial development, 2) industry will be aware of acceptable and/or restricted areas, and 3) there can be better planning on a State and local level for necessary governmental services.

Research: North Carolina's planning process incorporates on-going research activities and will rely on the information gathered from such studies to further refine the process. Research efforts will focus on informational

gaps identified and will attempt to fill these gaps. The results of such an effort could be expressed in various forms--criteria for site selection; further policy statements; guidelines for designation of suitable areas for energy facilities by local government; or even a refinement of the planning process itself.

The initiation and application of research should lead to enhanced environmental quality, and as a result of these continuing research efforts, better decisions with respect to coastal resources and specific projects can be expected. Therefore, the overall impacts are expected to be positive in nature.

### C. Shoreline Erosion Mitigation Planning Process

In North Carolina, Federal, State, county and local governments all influence the use of the shorelines. Resource management activities are distributed among the different State agencies, as well as different levels of local governments. The role of the planning process in this area will play a major part in coordinating these agencies in its efforts to manage the effects of erosion.

The mainland shoreline, in contrast to the ocean shoreline, is relatively sparse in terms of development and is characterized primarily by seasonal homes and water dependent uses. The economic conditions in this area are essentially dependent on the high productivity of the surrounding estuaries and bays, and the income levels of inhabitants along this shoreline are considerably less than those found on the ocean shoreline.

North Carolina depends on existing statutory authorities and administrative arrangements to manage the effects of shoreline erosion. Consequently, the impacts of having the shoreline erosion planning program approved by the Office of Coastal Zone Management are minimal. The greatest impacts to the environment will result from the future incorporation of policies pertaining to erosion into the management program (See policy development procedure, pg. 271, FEIS). It is anticipated that new shoreline erosion policies will, in fact, have significant impacts in the areas of regulation, land use planning, and Federal/State agency consistency with the management program.

## A. General Shoreline Erosion Policies

### Declaration:

It is hereby declared that the general welfare and public interest require that development along the ocean and estuarine shorelines be conducted in a manner that avoids loss of life, property and amenities. It is also declared that protection of the recreational use of the shorelines of the State is in the public interest. In order to accomplish these public purposes, the planning of future land uses, reasonable regulations and public expenditures should be created or accomplished in a coordinated manner so as to minimize the likelihood of damage to private and public resources resulting from recognized coastal hazards. To that end the following will be specific policies of the State of North Carolina.

### IT IS STATE POLICY THAT:

- I. Pursuant to Section 5, Article 14 of the North Carolina Constitution, proposals for shoreline erosion control projects shall avoid losses to North Carolina's natural heritage. All means should be taken to identify and develop control measures that will not adversely affect estuarine and marine productivity.
- II. Nonstructural measures designed to minimize the loss of private and public resources to erosion are preferred solutions to erosion problems provided such measures are economically, socially, or environmentally justified. Preferred non-structural control measures for shoreline erosion shall include but not be limited to establishment of building setback lines, subdivision regulations and management of vegetation. When structural controls are selected in developing alternative plans for erosion control, a clear rationale should be presented and those structural control measures which have the least effect on natural processes should be given prime consideration. (Note: For the purpose of this policy, beach nourishment projects are included with traditional structural control measures such as revetments. The reason for this is that beach nourishment projects are land disturbing activities that can drastically alter the estuary (as a borrow area), the barrier island (through which pipelines will be laid) and the beach and nearshore (through the replacement of aquatic bottoms with dry sand.))
- III. The State of North Carolina will encourage innovative institutional programs and scientific research that will provide for effective management of coastal shorelines.

IV. The planning, development, and implementation of erosion control projects will be coordinated with appropriate planning agencies, affected governments and the interested public. Maximum efforts will be made by the State to accommodate the interest of each interested party consistent with the project's objectives.

V. The State will promote education of the public on the dynamic nature of the coastal zone and on effective measures to cope with our ever changing shorelines.

B. Proposed Revisions or Additions to AEC Standards

I. Estuarine Shorelines

1. Shoreline erosion projects should not be constructed in beach or estuarine areas that sustain substantial habitat for important wildlife species unless adequate mitigation measures are incorporated into project design. Both the level of adverse effect and determination of what measures are appropriate and necessary to lessen environmental costs will be determined by those agencies responsible for protection and management of affected resources.
2. Project construction should be accomplished during periods of least significant biological activity. See Title 15 subchapter 3D, Section .0109(a) of the North Carolina Administrative Procedures Act, the Dredge and Fill Regulations (15NCAC 3D .0109(a)), as implemented under authority of the Dredge and Fill Act (G.S. 113-229).
3. The project should be located so as not to adversely impact upon a primary nursery area. 15 NCAC 3D .0109 and G.S. 113-229.
4. Projects should be designed so as not to create stagnant water bodies. 15 NCAC 3D .0109 and G.S. 113-229.
5. Materials must not be excavated from highly productive tidelands, bottoms and marshlands for the sole purpose of obtaining fill. 15 NCAC 3D. 0109 and G.S. 113-229.
6. Materials dredged from both private and public navigation projects should receive prime consideration for disposal on the beach and estuarine shorelines as long as the material has suitable physical and chemical characteristics:
7. Group of community bulkhead projects along estuarine shorelines will be acceptable only where lots are of sufficient size to meet all septic tank regulations or where sewer service is available at the time of application.

8. Bulkheads should be constructed inland of marshland and marshgrass fringes. 15 NCAC 3D .0109 and G.S. 113-229.
9. Bulkhead fill material should be obtained from up-land source. If the bulkhead is a part of a project involving excavation, the material so obtained may be used as backfill. 15 NCAC 3D .0109 and G.S. 113-229.
10. Shoreline erosion control projects shall not violate any applicable law or regulation of the State of North Carolina and will be consistent with AEC standards and local land use plans and other State policies.
11. For an estuarine shoreline erosion control project affecting more than 500 linear feet of shoreline, the project shall be reviewed and found acceptable by a registered professional engineer with recognized coastal experience, or by an authorized agent of the U.S. Soil Conservation Service, the U.S. Army Corps of Engineers or the North Carolina Coastal Resources Commission.

## II. Ocean Hazard Areas

1. Shoreline erosion projects should not be constructed in beach or estuarine areas that sustain substantial habitat for important wildlife species unless adequate mitigation measures are incorporated into project design. Both the level of adverse effect and determination of what measures are appropriate and necessary to lessen environmental costs will be determined by those agencies responsible for protection and management of affected resources.
2. Project construction should be accomplished during periods of least significant biological activity. See Title 15 subchapter 3D, Section .0109(a) of the Dredge and Fill Regulations (15 NCAC 3D .0109(a)), as implemented under authority of the Dredge and Fill Act (G.S. 113-229).
3. The project should be located so as not to adversely impact upon a primary nursery area. 15 NCAC 3D .0109 and G.S. 113-229.
4. Projects should be designed so as not to create stagnant water bodies. 15 NCAC 3D .0109 and G.S. 113-229.
5. Materials must not be excavated from highly productive tidelands, bottoms and marshlands for the sole purpose of obtaining fill. 15 NCAC 3D .0109 and G.S. 113-229.

6. On those ocean front lots which have no frontal dune formations, new constructions must be located at least ten times the long term annual erosion rate back from the dune line as defined in the North Carolina Water Plan, Chapter 10.
7. No development will be allowed on those lots which lack locally established minimum lot sizes due to shoreline erosion.
8. Inlet hazard areas as identified by past erosion and migration trends illustrate enough risks to life and property (CAMA G.S. 113A-120(6)) that new subdivision of land within inlet AECs should not be approved by local governing boards.
9. In order to avoid weakening the protective nature of frontal dunes, no development will be permitted which would involve the permanent removal, relocation or modification, of frontal dune sand or frontal dune vegetation. 15 NCAC 7H .0306. -
10. Individual property owners may obtain AEC permits to protect their existing structures along the ocean front if it is determined that the structure is threatened. A threatened structure is one that was built prior to March 1, 1978, and where the apparent erosion rate is such that the structure's foundation is imminently endangered. Normally, the structure's foundation will be considered endangered if the foundation is less than 20 feet away from the toe of the dune or erosion scarp.
11. The State will require that all structural erosion control projects demonstrate sound engineering for ocean shoreline erosion control projects. This will require that any project be reviewed and approved by a registered engineer with recognized coastal experience.
12. Preferred structural control measures to combat ocean front erosion shall be beached nourishment projects and offshore sills or offshore breakwaters when these are found to be the most effective control structures for a given site.
13. The use of seawalls and bulkheads to combat ocean front erosion is an unacceptable structural control measure, except in special cases, because these are a threat to the public beaches through acceleration of erosion caused by steepening the beach offshore profiles from wave reflections off the walls.

14. Materials dredged from both private and public navigation projects should receive prime consideration for disposal on the beach and estuarine shorelines as long as the material has suitable physical and chemical characteristics.
15. The bulldozing of the berm (that area between mean high water and where either vegetation begins or a distinct change in slope occurs) to create or augment the dune system will only be allowed where properties are threatened in the sense of Standard 10 above.
16. Dune areas outside of AECs shall not be used as sources fill material for low areas within the ocean hazard area. All fill material should come from other than dune sources. Note: This standard would require a redefinition of dunes to be protected.
17. Shoreline erosion control projects shall not violate any applicable law or regulation of the State of North Carolina and will be consistent with AEC standards and local land use plans and other State policies.

#### C. Directives to Staff

1. Research will be done on the use of revetment and riprap materials to stabilize shorelines that benefit marine organisms.
2. The State will encourage continued research on the effectiveness of planting natural vegetation to combat shoreline erosion and/or the determination of projects that could use natural vegetation for shore erosion control.
3. The CRC will encourage the State Sea Grant Program and State and Federal permit agencies to allow and assist private individuals to use breakwater devices, offshore sills, and revetments in order to collect more data as to their effectiveness in reducing erosion.
4. The CRC will coordinate AEC requirements and the subdivision of large tracts of land within HUD's "Interstate Land Sales Act" requirements to the fullest extent possible.
5. The CRC will coordinate the implementation of the coastal management program with requirements of the National Flood Insurance Program. The following suggestions will help in

more efficient enforcement of both programs and aid in accomplishing common objectives: (A) FIA needs to move as expeditiously as possible to complete flood insurance studies and to establish flood insurance rate maps; (B) AEC standards FIA construction requirements, and actuarial rates need to be combined and/or coordinated to better manage State/Federal identified risks; (C) A "No Insurance Zone" should be established within inlet and ocean hazard areas AEC; (D) The FIA substantial improvements percentage which allows exemptions from construction standards should be less than 50% of the structure's fair market value because it allows unsafe improvements which may double the existing size of the structure.

6. The CRC endorses the intent of proposed Chapter #33 on piers, bulkheads, and waterway structures in the N.C. State Building Code.
7. The CRC recommends that the State Property Office (Department of Administration) issue easements to fill for land reclamation projects where applicants can provide adequate documentation (aerial photos, remaining piers, dolphins, etc.) that their estuarine shorelines have eroded within the year prior to permit application.
8. The CRC along with Sea Grant assistance will work toward co-authoring a handbook on estuarine erosion control structures which illustrates typical design features, success and failures of different erosion control methods, and average costs involved.
9. The CRC will sponsor shoreline erosion/mitigation planning workshops for all interested persons seeking methods, answers, and alternatives management approaches on how to live with and/or combat shoreline erosion. The proceedings from these workshops will be disseminated to the public to create an awareness of the problem.

### Chapter III: Alternatives To The Proposed Action

Given the nature of the proposed action, which is approval of the North Carolina Section 305(b)(7), (8), (9) Planning Process requirements, all Federal alternatives involve a decision to delay or deny approval. OCZM could find that this supplement to the North Carolina Final Environmental Impact Statement does not meet the requirements of the Coastal Zone Management Act (CZMA) as amended, or is inconsistent with the approved Coastal Zone Management Program in North Carolina. The State could then re-submit Section 305(b)(7), (8), and (9) requirements. However, the Assistant Administrator has made a preliminary determination that this supplement meets the requirements of the CZMA as amended and is consistent with the North Carolina Coastal Management Program.

In the course of the development of the North Carolina planning elements, potential weaknesses were identified for the proposed planning processes (energy facility siting, shoreline erosion mitigation, shorefront access/protection). These weaknesses have been remedied by North Carolina; however, in order to elicit public and agency comment and assure that the Assistant Administrator's initial determination is correct, this section identifies areas where there are possible deficiencies and considers alternatives of delay or denial based upon each.

- I. The Assistant Administrator could delay or deny approval of this supplement to the North Carolina Final Environmental Impact Statement if the policies are not comprehensive enough to meet the requirements of the CZMA as amended (Section 305(b)(7), (8), (9)).

The Coastal Resources Commission has developed and adopted, for public hearing purposes, specific policies on energy facility siting, shoreline erosion mitigation, and shorefront access/protection in response to earlier comments received from this office. These policies have been developed to deal more comprehensively with the siting of energy facilities in the State's coastal zone, with shoreline erosion, and with provision and maintenance of existing public access to North Carolina's shorefront areas. The policies will be incorporated into the approved management program when the public comment period and subsequent revisions are complete.

North Carolina's original submission did not include either new or proposed policies. Rather it relied on existing program policies to fulfill the requirements of the three new planning requirements (Section 305(b)(7), (8), (9)). OCZM did not believe that the scope of these policies was sufficiently broad to provide for an adequate planning process for energy facility siting or shorefront access.

The addition of the identified new CRC policies satisfies our earlier concerns regarding the scope of comprehensiveness of the policies for all three planning requirements. Therefore OCZM believes that this supplement to the North Carolina FEIS fully satisfies the requirements of Section 305(b)(7),(8),(9).

II. The Assistant Administrator could delay or deny approval of each (or any one) of the separate planning element submissions in the Supplement to the North Carolina FEIS based upon potential deficiencies identified for a specific planning element.

This alternative action would be utilized only if there were a specific requirement for a given planning element which did not fulfill the requirements outlined in the CZMA rules and regulations.

The only potential deficiency identified in this submission, other than the overall comprehensiveness of the policies discussed in Alternative I, was that the energy facility siting process seemed fragmented and somewhat confusing. North Carolina has attempted to deal directly with those Federal agencies expressing this concern. OCZM believes that, in addition to the Federal/State coordination that now exists as a result of program approval under Section 307, the Coastal Area Management Act permitting system throughout the coastal zone will alleviate the perceived problem of a fragmented permitting system.

Additionally, we believe that the State legislation which would be required to further alter this permitting system is not a realistic option at this time. Similarly, we believe that the advantages to approving this element, and the new CRC policies developed for this submission, are much more important to the State's coastal management program than the potential advantage of additional State legislation regarding permitting in North Carolina's coastal zone.

Therefore, OCZM does not believe that the three new planning elements should be separated for approval purposes in North Carolina. The one concern over the "fragmented" planning/permitting process for energy facility siting appears to be improving significantly since program approval with the use of Section 307 Federal Consistency Provisions of the CZMA and the implementation of the State's CAMA permitting provisions.

## CHAPTER IV: Probable Adverse Environmental Effects Of The Program Which Cannot Be Avoided

### A. Shorefront Access - etc.

The act of approving North Carolina's Shorefront Access and Protection planning process will not in itself lead to the loss of valuable resources since the process is designed to provide necessary access while insuring minimal adverse impact on the local physical and economic environment. In this regard, the overall anticipated effects are positive. However, beach protection projects will be more costly due to the addition access requirements. The gains afforded to the public should clearly offset the loss in funds.

Another possible adverse impact of providing additional access would be to attract additional beach users. This increase could severely impact fragile primary dunes should the public suddenly focus on a certain access area. Also, the increased number of seasonal visitors could place an unanticipated strain on local public services resulting in the degradation of the local environments. While, this impact is not anticipated it is a practical consideration facing local governments in developing their local access and protection plan.

### B. Energy Facility Siting - etc.

The act of approving North Carolina's energy facility planning process will not in itself lead to the loss of valuable resources since the process is designed to site necessary facilities in the most suitable locations. In this regard, the overall anticipated effects are positive. However, there is also the possibility that certain negative effects will be present as well. Some of these negative effects are as follows:

1. Restrictions on development in certain coastal areas (AECs)--as stated before, certain fragile areas of North Carolina's coastal zone have been singled out for special protection and form the core of the CAMA permitting program (see Chapter 5, Section 1). Although the standards do not categorically exclude large facilities such as energy facilities, the standards will in all likelihood, place restrictions on development. While these restrictions will not necessarily prevent an energy facility from locating within an AEC, additional precautionary or mitigating measures could be viewed as delaying a project or even displacing a project to a more inland site should the economic expense imposed begin to outweigh other benefits. Although this is a possibility, it is felt that a justified and properly designed project can be allowed. Early consultation measures provided for in the process should help flag potential problems early and avoid costly delays or displacements. In addition, any restrictions imposed by AEC standards should be balanced

by designating areas where energy development will be encouraged. While some economic benefits may be sacrificed, these should be minimized because the process will also identify areas more suitable for development.

Policy development on coastal energy facilities could also be viewed as having an adverse effect in that certain policies may discourage or even restrict energy facilities in certain areas. While this may be true, the State has attempted through its policy development process (reference Chapter 6) to gain input from all affected interests. Therefore, unacceptable or highly restrictive policies should not be an end-product of the process. In addition, the State would balance its policies such that certain areas would also be encouraged for energy related activities.

2. More detailed analysis in the State's environmental review procedures--implementation of the State's energy facility planning process would place a burden on the applicant to provide more detailed information on the costs and benefits associated with a project than previously required. An environmental impact assessment of this depth would require additional time to develop and could very possibly involve expenditure of more funds. This could be perceived as delaying project initiation and requiring time spent in analysis in excess of projected impacts. However, the additional time that may be spent in developing such an assessment should save time in the long run in that, if adequate, this assessment would contain all necessary information on the project's impacts and suffice for any analysis required under the various State permit requirements. The end result should help expedite the siting process rather than hinder it. Also such information should enable the State to make more informed decisions concerning project location and the need for and scope of mitigating measures.

#### C. Shoreline Erosion - etc.

The probable adverse effects of the planning process are similar to those described in the Final Environmental Impact Statement of the management plan, pgs. 286-287. Rather than going into an elaborate discussion of these effects, reference is made to that section of the document.

Chapter V: The Relation Between Local Short Term Uses of the Environment and the Enhancement of Long Term Productivity

A. Shorefront Access and Protection Planning Process §305(b)(7)

This section is adequately discussed in the North Carolina FEIS on page 288.

B. Energy - etc.

A prevalent aspect of North Carolina's energy facility planning process is that those restrictions placed on the short term use of the environment will assure a long range perspective of integrating preservation of valuable coastal resources. Without such a management scheme intense, short term uses such as those realized through energy-related industrial development could result in future restriction on all industrial growth and degrade or eliminate basic resources.

Although North Carolina's coast is not expected to be intensely impacted by energy facilities, rational allocation of resources is necessary to manage the impacts such facilities carry and to achieve a stated goal of environmental protection and improvement of socio-economic conditions. Detrimental short term uses such as inappropriate location of energy facilities can only undermine this goal.

C. Shoreline Erosion - etc.

The relationship in the planning process between short term uses of the environment and the enhancement of long term productivity is one of controlling and/or restricting those uses along the shorelines which might create an undesirable demand on the State's resources. This will be balanced by the long term input of State resources in the form of public expenditures for technical assistance, institutional and research programs.

The basic precept behind this approach is that public resources, i.e., public expenditures can be more wisely used if these resources are used within a system of management that educates and/or informs shoreline owners and others of the values associated with long term productivity. For example, by establishing development standards specific to erosion hazard areas, development along the shoreline can be directed in a manner as to minimize public and private expenditures for future protection.

## Chapter VI: Irretrievable and Irreversible Commitment of Resources that Would Result From the Proposed Action

### A. Shorefront Access - etc.

(Re: Document)

### B. Energy Facility - etc.

The approval of the energy facility planning process will not in itself lead to the loss of resources as might a site specific project associated with the process. Instead, the process attempts to focus on the various aspects associated with such development and balance the trade-offs involved. (See Chapter on Energy Facility Siting, Section 2). As such, the process should help insure that the present quality of the coastal environment is maintained or enhanced for future generations.

By guiding development out of certain fragile areas and into other areas, the process could cause these areas to be more intensely developed which will be an irreversible and irretrievable commitment of resources. However, this should allow other more fragile areas to remain less intensely developed. Finally, the coastal agency review process articulated in Chapter 6 of the FEIS will complement the checks and balances instituted through other programs having energy facility siting functions.

### C. Shoreline Access - etc.

The basic concept of the planning process is similar to the North Carolina Coastal Management Plan of which it is an integral part. Hence, the discussion on the commitment of resources by the planning process that would be irreversible or irretrievable should it be implemented would be similar to the discussion in the Final Environmental Impact Statement prepared on the Plan. (pg. 289).

## Chapter VII: Consultation and Coordination with Others

### A. Shorefront Access - etc.

The involvement of all interest groups and levels of government is discussed in the FEIS on pages 290-292.

### B. Energy - etc.

An overriding aspect of North Carolina's energy facility planning process is that siting energy facilities requires expertise from various actors since energy facilities are uses that transcend purely local or State interests. As such, the national interest in providing for such uses of regional or national interest has been a focal point of program coordination and consultation activities. (See Chapter 2, Section 3 and Chapter 6, Section 3 of the N.C. Coastal Plan for a full discussion of governmental coordination efforts and consideration of the national interest.)

Early in program development energy facilities were identified as uses of regional benefit for which special consideration should be given. Also, in development of the planning process, input in inventorying and forecasting future demands was sought from Federal and State agencies (see Section 1 of Energy Facility Planning chapter for a full discussion of forecasted facilities and demands). Finally, affected agencies identified in early program development were further asked for input into the process.

An important aspect of coordination has been to integrate coastal management concerns into the existing energy facility siting process. Assurance that consideration of coastal objectives will be given is found in Section 307 of the FCZMA and Executive Order #15, and the State will use these tools to help coordinate various State interests as well into a unified position on a project.

Finally, ongoing policy development of coastal energy policies mandates that all affected interests be considered in policy formulation. In this way, the State can include local as well as Federal interests into relevant policy statements in the future.

### C. Shoreline Erosion - etc.

#### Past Involvement:

During the development of the planning process, consultation with other State and Federal agencies were initiated to obtain their concerns and ideas regarding particular sections of the planning process.

In particular, the Office of Public Works, Division of Marine Fisheries and the State's Attorney General Office were requested to review and comment in their area of expertise.

Consultation and coordination with institutions and agencies outside of State government included contacts with the NOAA Sea Grant Program, North Carolina State University and other State government agencies in an effort to obtain information pertaining to such diverse topics as policy and standard development, shoreline erosion control measures, and State expenditure ratios for erosion control measure.

#### Present and Future Consultation and Coordination

Consultation and coordination with other agencies and institutions is a key ingredient of the planning process. In addition to the presently existing contacts, it is anticipated that the planning process will greatly increase this number after implementation, to further augment the information already obtained. Future contacts anticipated are with local governments in the coastal zone regarding their concerns with shoreline erosion, Federal agencies and their involvement in the planning process, and the concerns of coastal residents, landowners, and others concerned with shoreline erosion.